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MEDICAL MAGAZINE.

AN ILLUSTRATED MONTHLY, DEVOTED TO

MEDICAL AND SURGICAL SCIENCE.

EDITED, UNDER THE SUPERVISION OF

JOHN ASHHURST, JR., M.D., AND JAS. T. WHITTAKER, M.D., LL.D.,

Barton Professor of Surgery and Professor of Clinical Surgery in the University of Pennsylvania; Surgeon to the Pennsylvania Hospital, etc.,

Professor of the Theory and Practice of Medicine in the Medical College of Ohio,

BY

HENRY W. CATTELL, A.M., M.D.,

Demonstrator of Morbid Anatomy in the University of Pennsylvania; Pathologist to the Presbyterian Hospital, etc.

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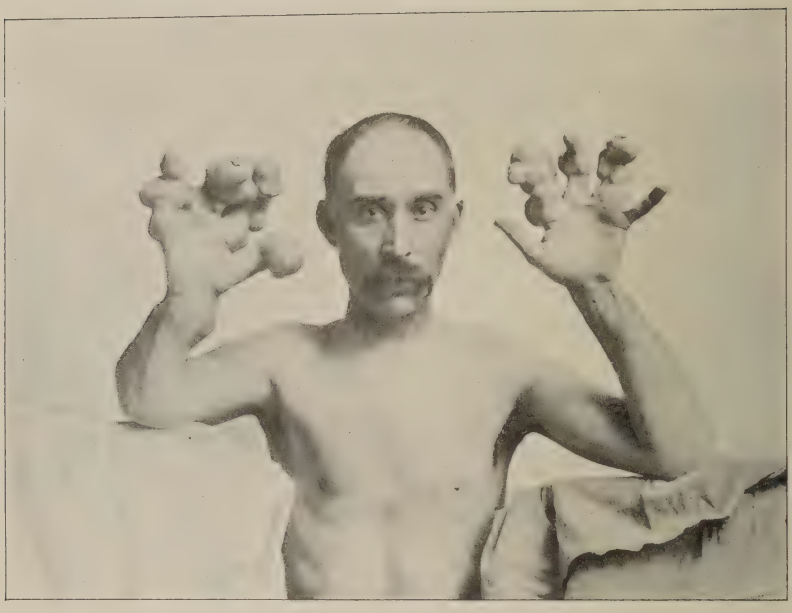


FIG. 1.—Anterior view of case of multiple osteo-ecchondroma.



FIG. 2.—Posterior view of the same case.

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ORIGINAL COMMUNICATIONS.

A CASE OF MULTIPLE OSTEO-ECCHONDROMA.[1]

BY JAMES. T. WHITTAKER, M.D., LL.D.,

Professor of the Theory and Practice of Medicine in the Medical College of Ohio.

J. B. Y., aged forty, farmer, admitted to the Good Samaritan Hospital on December 5, 1893. Family history negative. Personal history: has had whooping cough and diphtheria, no other diseases. At the age of six he received a shock from a stroke of lightning, which rendered him unconscious for some time. He knows of nothing else which could sustain any possible relation with his present condition. Nine months after the shock of lightning there was noticed an enlargement of the middle joint of the right index finger, and about the same time an enlargement of the same joint of the middle finger. Gradually all the joints of the fingers of the right hand became involved. These enlargements increased so that by the age of twelve they were about the size of walnuts. At this age he began to notice the same process developing in the left hand. The growths continued to increase steadily in both hands, and new nodules slowly developed, so that finally the fingers presented the appearance of medium-sized, nodulated potatoes. (Figs. 1 and 2.)

The tumors of the fingers measure as follows:

[1] Presented, December 7, 1893, to the County Academy of Medicine. History by Dr. Shepherd, Interne of the Good Samaritan Hospital.

RIGHT HAND.

Thumb, one tumor, circumference	8 inches.
Index finger, two tumors, larger circumference	11 inches.
Index finger, two tumors, smaller circumference	6 inches.
Middle finger, one tumor, circumference	9 inches.
Middle finger, one tumor, length	7 inches.
Ring finger, absent (amputated).	
Little finger, two tumors, larger circumference	8 inches.
Little finger, two tumors, smaller circumference	5½ inches.

LEFT HAND.

Thumb and little finger are perfectly normal.	
Index finger, two tumors, larger circumference	8 inches.
Index finger, two tumors, smaller circumference	6 inches.
Middle finger, one tumor, on middle joint, circumference	5½ inches.
Ring finger, three tumors, circumference	5, 6½, 7 inches.

The tumors are nodulated; they are firm, but somewhat elastic. They are not painful except under hard pressure. The superficial veins are considerably enlarged; the skin is tense and shiny.

FIG. 3.



About ten years ago the patient in falling injured the third (ring) finger of the right hand, whereupon the finger became gangrenous and had to be amputated. It weighed, the patient says, six ounces.

By measurement the right arm is found to be two inches shorter than the left, and the right forearm three inches shorter than the left. The right thigh is six inches shorter than the left. The right leg is three inches shorter than the left. The shortening of the extremities was first observed at the age of eight years. It is due to apparent development of bony masses which deform the bones. (Fig. 3.)

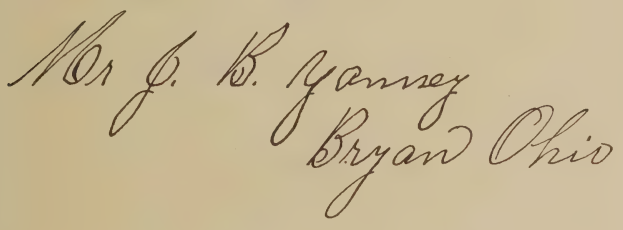
On the right foot an enlargement is found in the region of the external malleolus. It is about the size of a lemon. The patient does not remember when it first appeared. Somewhere about the age of twenty-one he first noticed an enlargement at the base of the second toe. Hereupon the other toes became involved in the same order as the disease progressed in the hands.

About the age of twelve years he sustained an injury of the second toe, in consequence of which it had to be amputated. At the present time the other four toes each show growths about the size of hazel-nuts.

The left foot is perfectly normal, with the exception of the fourth toe, which shows a small nodule.

There are no tumors in any other region of the body. The appearance is that of a man in good health, the physiognomy is pleasing, the disposition equable and subdued. The patient gets about perfectly well by the aid of an iron framework under the right shoe. Notwithstanding the great deformity of the fingers, the patient is quite dexterous in the use of his hands. He feeds himself, he dresses and undresses himself, and by resting the handle of the pen between the tumors of the index and middle fingers of the right hand, he can grasp it with his thumb and write with ease. Thus, the patient writes his name as follows:

FIG. 4.



The tumors in this case, as in most cases of the kind, are made up of both bone and cartilage. The mass of the tumors on the leg and forearm appears to be bone, while the mass of the tumors on the fingers seems to be cartilage. The enlargement below the nodular mass of the thumb along the course of the shaft of the first phalanx is apparently entirely bone. The case may therefore be described as one of multiple osteo-ecchondroma. The deformities of the arm and leg associate the case more closely with the multiple exostoses of childhood. This condition was first distinctly described by Virchow in the case of a boy who displayed tumors on the ends of the bones of the extremities and the ribs, which had been commonly regarded as rachitic. In one examination more than twenty exostoses were counted on various bones. Improvement occurred under the use of the iodide of potassium. There was subsequent relapse and the development of new exostoses, until finally as many as sixty-five could be counted. The boy had suffered with rheumatism, and died finally of endo-pericarditis. The skeleton showing the deformities was preserved in the Museum. Most of the cases subsequently reported differed in the fact that they developed, as in the present instance, entirely without pain. Virchow, however, is not willing to admit this as a point of great difference, regarding the disease as a juvenile form of nodular rheumatism.

What is the genetic relationship of these multiple growths? This is the question of real interest to the clinician.

The deformities in the long bones are very different from those of rickets, with its distinct curvatures and general disturbances of nutrition.

Multiple exostosis distinctly shortens the bones, but shows rather angular deformities; moreover, multiple exostosis does not affect the bones of the skull. It is always a purely local process.

Hereditary syphilis does not develop exostoses, but flat hyperostoses and periostoses, and in the diaphyses of the long bones, and on the bones of the skull, regions not attacked in multiple exostosis. Acquired syphilis often enough develops exostosis, but not at the ends of the bones (Virchow). The deformities of gout, which may coarsely simulate exostosis or ecchondroma, are due to deposits of sodium urate, and are associated with nutritive changes entirely absent in these tumors of bone and cartilage. On the whole, the condition is more closely allied with nodular rheumatism than any other form of disease, though it distinctly differs from it in the time of its development and in the absence of bone.

The predisposition of heredity is distinctly determined in many cases. Sometimes the condition has been transmitted through several generations. MacLean describes six cases of multiple exostoses occurring in the same family. In this connection it must be observed that the process develops during the period of growth of the bone. The great majority of cases occur in the young, or at least begin in youth.

Hoffmann declares that multiple exostosis is much more frequently met in the male. The disease develops without fever and without pain, and is usually accidentally observed at first, as it interferes with motion or locomotion. It is entirely a benign process, and is apparently perfectly local. The motion of the joints is preserved until actually hindered by the size of the growths. In exceptional cases pressure upon nerves may produce pain, paralysis, even epileptiform convulsions. In rare cases, dystocia has developed from deposits in the pelvic cavity. The development of the process is usually symmetrical, though the right side is often more frequently affected, as in the present case. But Bessel-Hagen observed in his cases a preference of the left side, as did also Rubenstein, in the single case which he reported in the *Berlin klin. Wochenschrift*, August 10, 1891.

Similar deformities have been observed in the lower animals. Grognier described them in the horse. The pure multiple exostosis Virchow considered to be a rare affection, but Volkmann says that he found it the most common form of exostosis.

The tendency of this form of disease is to arrest at the age of maturity. A number of cases have been recorded which showed diminution and even disappearance of many of the growths. The peculiar deformities resulting from the development of the process on one of the two long bones in the forearm and leg, whereby the growth of one bone is arrested while the other continues, was long ago remarked by Humphry, and has been since described by Bergmann. Most of the cases are mixed tumors,—*i.e.*, both cartilage and bone. Bessel-Hagen, of Heidelberg, reported twenty-eight such cases of multiple cartilaginous exostoses (*Verhandlung des XIX. Congresses der Deutschen Gesellschaft für Chirurgie*, Berlin, 1890, pp. 471

to 613), under the title "Ueber Störungen des Knochenwachs, thums bei multiplen cartilaginären exostoses."

This patient is rendered unfit for any occupation in life, and is reduced to the necessity of supporting himself by the exhibition of his condition. He starts with us on a tour of the various medical colleges and societies.

NOTES ON TUBERCULOUS PLEURISY.[1]

BY J. H. MUSSER, M.D.,

Assistant Professor of Clinical Medicine in the University of Pennsylvania.

CASE I.—In the fall of 1890 I was asked to see W. A., the brother of a physician, who was said to be seriously ill. I found a tall, spare man of five and thirty, extremely weak, suffering from chest pain, dyspnœa, and severe paroxysmal cough. Both symptoms caused sleeplessness and great prostration. The cough was most harassing, was spasmodic and mostly unproductive. A mucous expectoration alone was discharged at times. The dyspnœa was extreme, the respiration, 30 per minute when at rest, would increase to 50 and 60. But little need be said of chest pain. It was so severe as to require constant attention in order that relief might be secured. With the lung symptoms there were fever and sweats. The fever ranged irregularly from 99° F. to 104° F. in twenty-four hours. It was further noted that the appetite was lost, the tongue heavily coated, and the bowels relaxed.

On physical examination the left apex, both anteriorly and posteriorly, was found scarcely to move in inspiration; in the former position immobility reached down to the third rib. The fremitus was absent, the area dull on percussion, the breath sounds absent, except at the spine of the scapula; over the base a distant bronchial breathing could be heard. The right side was contracted, the base anteriorly retracted, and the expansion much lessened. Dulness and absent breath sounds were noted.

The heart was displaced to the left. The physical condition seemed to be due to a greatly thickened pleura, which capped the left lung, and to pleural thickening and old adhesions at the right base. The patient had had three attacks of pleurisy; his family were predisposed to tuberculosis, and the patient was exposed to infection. Careful attention to diet, and treatment of the gastric catarrh, respiratory stimulants (strychnine), strapping the chest to relieve pain, with quinine by the rectum, aided the man in recuperation. Subsequently, respiratory gymnastics, tonics, and an

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[1] Read before the American Climatological Association, May 26, 1893.

out-door life brought him in condition to return to business. When last seen by me the parenchyma of the lung had apparently not been invaded.

The above scantily recorded case represents an extreme type of pleurisy which is of tubercular origin. The family history, the occurrence of repeated attacks of pleurisy, the occurrence of cough, pain, and dyspnœa as previously indicated, with some emaciation, point very strongly to tuberculous pleural infection. The fever and sweats are characteristic phenomena of the tuberculous process.

It would scarcely be credible that large thickenings of the pleura could develop, were we not familiar with the findings of post-mortem examinations. Frequently great masses are seen. The writer recalls one case in which masses four and five inches thick surrounded the compressed and collapsed lung, which was free from disease. Some fluid filled up the greatly shrunken pleural cavity. Practically, the man lived with one lung. Correct conclusions as to the physical condition of the lungs arose particularly from the prominence of the facts derived by inspection and palpation,—retraction, lessened movement, and lessened fremitus with absent breath sounds, and decisive symptoms which would occur in cases in which fluid or inflammatory exudations are interposed between the heart and lungs.

Case II.—The patient was a farmer's wife in Lancaster County, aged forty-five, who had borne two children, and had attended to the exacting duties incident to her husband's occupation. She was exposed to infection at about twenty-five. After this period she was in impaired health, and under weight without cause, or at least without known cause, for the reason that trouble had not been taken to ascertain the cause. Finally, after a season of care she took to bed. She lost more flesh, had fever, and some sweats, cough racked her, and there was dyspnœa on exertion. The illness continued over several months. If the weather was inclement she would keep to her bed; generally she would rise for two or three hours each day. When seen by the writer, she had cough which kept her awake, dyspnœa, and chest pain. The physical signs of thickened pleura were found at apex anteriorly, and over the scapular region of the right lung. The patient was emaciated to a moderate degree, listless, and worn from cough. She gradually improved, and as spring advanced went out, and is now fairly well, although not able to take on excessive and unusual labors.

Case III.—A woman, seamstress, aged twenty-five, was ill two months with unilateral pleural effusion, which was aspirated. She did not improve, had a mild fever, was growing weaker; an effusion on the opposite side was found. After a long illness (two months) she fully recovered, and now, six years hence, is conducting her occupation.

Case IV.—An Irish laborer, aged forty, prematurely aged in appearance, was admitted to my ward in the Philadelphia Hospital with bilateral pleural effusion, detected by the usual physical signs and by aspiration. There was no dislocation of the heart. Cough, dyspnœa, and chest pains were most pronounced symptoms. There was much mucous expectoration,

which never contained bacilli. The dyspnœa occurred in paroxysms as well as being constant. When admitted, the temperature was about 102° in the evenings and 100° in the mornings. After a week in bed it fell to normal. The patient was much emaciated. The fluid aspirated was bloody, and contained bacilli, and when guinea-pigs were inoculated tuberculosis was set up.

The patient remained under observation all winter. The effusion gradually lessened, and the weight and strength improved. The cough and expectoration subsided, but dyspnœa on exertion lingered a long while. The physical signs of thickened pleura remained at the bases, but no contraction of the chest or dislocation of the heart was observed on the last examination.

Case V.—The patient was sixty years old and has had a hard life. He had one testicle removed by Professor Ashhurst in 1885, and the second at the Episcopal Hospital in 1887, because of tuberculous disease. He improved, but did not recover full health. He had been under observation the past three years in the Philadelphia Hospital. Cough and dyspnœa harassed him. The latter symptom was most marked. He was under weight and feeble, but did not have fever. The anterior portion of the left thorax was contracted, behind it was unduly prominent. A thickened pleura with absent breath sounds and without fluid extended from the third rib to the margin in front and from the middle of the scapula to base behind. Absent movement and fremitus with flattening and progressive retraction were noted. There was no history of acute pleurisy; the progress was gradual: after being under observation two years infection of the right lung took place. Latterly the tuberculosis became general, and death was caused by infection of the cerebral meninges.

Case VI.—At present an Irishman, aged thirty, who has had attacks of pleurisy, is in the wards of the Philadelphia Hospital. He is under weight, and, although able to assist in light hospital duties, has some cough and much dyspnœa. The left lower three-fourths of chest is retracted in front, bulging behind. It is non-expansive and fremitus is absent. Dulness is marked. Apex of heart is not detected. The apex of the right lung is the seat of commencing tuberculosis. In the second and third interspace of left lung there is low-pitched bronchial breathing. At the extreme apex of the same there is harsh breathing. The sputum contains bacilli but no elastic fibres. With the exception of the apex behind, the whole left lung is useless, and apparently being gradually closed in the grasp of contracting tuberculous exudation.

The above series of cases represent various types of cases familiar to all of you. Other examples could be given of different location, mode of progress, and type.

Mode of Onset.—It is thus seen that the disease may develop in several ways.

1. It may develop acutely or by a series of acute attacks, eventuating

in chronic chest deformity, poor health, and persistent dyspnœa with occasional cough.

2. Acute pleurisy with effusion may occur; often the accumulation may be bilateral. The same prolonged impairment of health, emaciation, and dyspnœa will be found. Chest deformity will not be so marked, but the respiratory capacity is lessened.

3. It may develop insidiously, as in the case that arose secondarily to genital tuberculosis.

Diagnosis.—We note in most instances that the patients are adults, over thirty; that they are under weight; that they are unable fully to meet the requirements of an active life; that they have periods of poor health, during which exacerbations of fever, cough, and dyspnœa occur; that dry painful cough and dyspnœa are the most marked pulmonary symptoms.

General and pulmonic symptoms point to the condition. Emaciation is the most marked of the former. It is not extreme. It is seen in the gaunt subjects in the middle period of life who have chronic cough, and are often laid up with pleuritic attacks. The patients are from ten to twenty pounds under weight. They are somewhat anæmic. If compelled to remain in-doors it is more marked. The lips are blue. The patients are sensitive to cold and dampness. The latter excites pleuritic pains. Gastro-intestinal catarrh is common. The patients are then sallow and have bilious attacks.

Of pulmonary symptoms, unproductive *cough* is the most harassing. The cough is readily excited by faucial or other irritations. It is dry and spasmodic; repeated efforts may result in the expectoration of a small amount of clear mucus. The expectoration does not contain bacilli. *Dyspnœa* is present to a greater or less degree. It is excited upon unusual exertion. It is not asthmatic in character, and does not interfere with sleep. The latter is always secured if cough or chest pain is not troublesome.

Pain.—The pain may be more or less constant. It is then oppressive in character, and like a constriction or indrawing. It is associated with much chest deformity, dislocation of organs, and dyspnœa. Acute pain follows "cold," exposure, or over-exertion. It is the familiar oft-recurring "stitch" that patients are affected with from time to time. While the general and local symptoms point to the true nature of the case, the *physical signs* are of the utmost value. They are elicited by the usual methods, but stress must be laid upon the importance of inspection and palpation. Without resorting to these methods, unfortunately too infrequently done, the diagnosis cannot be established fully. Indeed, the disease is overlooked, I am fully convinced, because inspection and palpation are not resorted to.

Examination of Serous Exudations.—The result of such examination is rarely satisfactory. In one case only were bacilli found in the serous exudate out of many in which they were sought for.

Infection.—I am fully convinced, however, that in cases of the above symptom-group we are justified in laying much stress upon a history of exposure to infection. If, with such symptoms, exposure is demonstrated, the diagnosis is pretty well established. Primary infection of other organs in the patient with such symptoms renders a diagnosis almost final.

Tuberculous pleurisy is distinguished from pulmonary tuberculosis by the large extent of signs of pleuro-pulmonic invasion, in comparison with the general symptoms, by the age, by the absence of extreme hectic and extreme emaciation, by the difference in the character of the sputum, by the absence of bacilli, by the unproductive cough, the extreme chest pain, and the chest deformity. The middle or basic portions of the lung are most frequently affected.

Course and Termination.—1. After an illness of three months or more, with or without effusion, a cure may be fully established. We must not be deluded into believing that reinfection either of the pleura or the lungs will not take place because full health, weight, and strength are restored. The cases of acute pleurisy which afterwards become tuberculous are of this class, of which many examples might be given. 2. Other cases do not get well, but remain stationary with five conditions,—impaired strength, reduced weight, shortness of breath on exertion, more or less cough, and gradual chest deformity. 3. General infection may take place. 4. The lungs may be invaded, and the pulmonary type overtop the pleuritic. Infection remote from the primary pleuritic attack may take place. One patient, aged fifty-four, had a long winter's bout with pleurisy with effusion. Three years afterwards tuberculous caries of the vertebræ developed. Another, exposed by nursing her son, had apical pleurisy. The third rib became carious, and, although it was excised by Agnew, the vertebræ became carious, and now bone tuberculosis is at its height. 5. The peritoneum may be infected, particularly the sub-diaphragmatic peritoneum, with hepatic and splenic tuberculosis. It must not be forgotten that in many chronic cases of primary tuberculosis the major lesion is in the pleura, thereby preventing the rapid decline otherwise expected from the apparent excess of lesion as the physical signs would appear to indicate. Moreover, out of this type comes a large portion of the group of cases of fibroid phthisis.

Prognosis.—It is always cheering to make out a tuberculous pleurisy when in the midst of much pulmonary tuberculosis. First, the probability of a cure is very much greater than in other forms of tuberculosis. Second, a partial cure can be promised in many cases. Then the progress is slow, and hence the duration of life much greater than in pulmonary tuberculosis. The symptoms of the terminal stage are, however, more distressing. The dyspnœa, the breast pang and chest constriction, the internal suggestions of dragging or pulling, as upon organs, are agonizing to witness. The harassing cough is most weakening to the patient. Tuberculous peritonitis, of sluggish type, adds to the severity of the terminal symptoms.

HERNIA IN CHILDREN.

BY WM. E. WIRT, A.M., M.D., PH.D.,

Professor of Orthopædic Surgery in the Medical Department, University of Wooster, Cleveland, Ohio; Visiting Surgeon to University Hospital; Orthopædic Surgeon to Cleveland Hospital for Women and Children; late House Surgeon to Hospital for Ruptured and Crippled, New York City, etc., etc.

It has been variously estimated that hernia is found in from one-eighth to one-sixteenth of the entire population. About one death occurring in every six hundred is due to this affection. Almost every aperture leading directly or indirectly to the abdominal cavity is liable more or less frequently to become the point of exit of a hernia. In the order of frequency of occurrence herniæ may be named as follows: inguinal, umbilical, femoral, ventral, obturator, ischiatic, perineal, and diaphragmatic. For every ventral hernia there are about four femoral, five umbilical, and sixty-two inguinal herniæ.

At the Hospital for Ruptured and Crippled, New York City, there were treated during the five years from September, 1887, to September, 1892, 19,756 cases of hernia, or about 4000 per year. The relative frequency of the different forms is as follows:

	No. Cases.	Male.	Female.	Under 14.	Right.	Left.	Double.
Inguinal	16,864	14,994	1870	4348	7806	4375	4686
Umbilical	1,488	569	919	789	. . .	. . .	. . .
Femoral	1,135	418	717	26	700	379	56[1]
Ventral	269	95	174	13	. . .	. . .	. . .
Total	19,756	16,076	3680	5176	8506	4754	. . .

[1] These fifty-six double femoral hernia cases only cover the reports of four hundred and seventy-four femoral cases. Report for 1891 and 1892.

Sex, Age, etc.—Hernia in general is found much more commonly in males than in females. Of the above 19,756 cases, 16,076 were males and 3680 were females, or about four and one-third times as many males as females. Of the inguinal variety of hernia, which includes the great bulk of the cases, there were 16,864 cases; of which number 14,994 were males and 1870 were females, or about eight times as many males as females.

Umbilical hernia is found more frequently in females than males, nearly in the proportion of two to one, and over half the cases are seen in children. Femoral hernia is also found more frequently in females than males, but is

rarely seen in children, only five cases a year are noted out of four thousand cases examined.

Of the total number of cases, 19,756 of all kinds treated in five years, there were 5176 children under fourteen years of age, or a little over one-fourth of the whole number.

Etiological Factors.—It has been noted that climate and the condition of the patient are factors bearing on the relative frequency of the affection. Of countries, Spain and Portugal have the highest per cent. of ruptures per population, and the countries of South America the lowest. Of the States of the Union, Minnesota has the highest average and West Virginia the lowest. Physical condition of the patient has a marked bearing on the subject. Children weakened or debilitated by disease are more liable to the affection than the rugged; and having the hernia, it is harder to retain in place when the child's general health is weakened by any cause whatsoever.

The passage of the spermatic cord and vessels through the inguinal canal has always been recognized as the prime causation factor in the production of inguinal hernia and need not be discussed. Umbilical hernia may be congenital or acquired. Of the congenital variety, arrest of development of the abdominal walls is a frequent cause. Dr. James R. Chadwick, of Boston, suggests another cause. We know that the intestines are developed outside the abdomen. Should their volume be too great to be readily enclosed by the undersized abdominal walls, at the time when the abdomen should be normally enclosed, the umbilical vesical, should it fail to have atrophied, acts by means of its duct to keep part of the intestines without the abdomen, and thus to form a hernia. Dr. Chadwick demonstrated his views by several dissections; other cases have been reported which favor this idea. The umbilical aperture is ordinarily patent at birth, and is therefore a naturally weak point. Dr. Edward Swasey, in reporting five hundred cases of hernia in children observed at the Hospital for Ruptured and Crippled, noting that female children are more liable to umbilical hernia than male, suggests that it is probably due to the relatively larger funis in the female child. He further attributes the greater frequency of right inguinal hernia than left to the weight of the liver pushing the intestines on the right side down into the funicular process. The region at and about the umbilicus being naturally weak, the acquired form in children is brought about by crying, coughing, straining at stool, and the like. Femoral hernia is rarely seen in children, and the etiological factors acting, in the comparatively few cases observed, are not marked, or, at least, have not been well made out. Ventral hernia is usually seen in feeble and delicate children, and especially when the muscular system is poorly developed. The usual contents of a hernia in a child is intestine or omentum, though rarely an ovary, uterus, kidney, or a part of the bladder has been found.

Treatment.—The treatment of hernia in children can be classed under three heads: 1. General treatment. 2. Mechanical support. 3. Operative measures.

1. *General Treatment.*—If possible the attending physician should obtain some knowledge as to the circumstances under which the hernia first appeared, and this active causation factor should be removed. Suppose that it first appeared during a fit of vomiting, and from thence, after each meal, the child is sick and the hernia appears. In such a case the feeding of the child is of paramount importance. Should the hernia come down during fits of coughing, treatment for the cough comes first. Violent explosive efforts must be checked before the hernia can be cured.

Recently I was called in consultation to see a child with a large right inguinal hernia. The child is suffering from whooping-cough, so that nothing very effective can be done till the cough is cured. An elongated uvula might be the cause of vomiting or coughing. A rectal polypus or chronic diarrhœa may cause a hernia or prevent its permanent cure by compelling the child to strain at stool. Relief from these conditions should be obtained. Should the hernia appear during micturition, see that the preputial and urethral orifices are free. Possibly the child is suffering from a calculus. If the child is emaciated and its muscular system poorly developed, tonics, cod-liver oil, good food, out-door exercise, and sunshine are eminently in order.

2. *Mechanical Support.*—At the Hospital for Ruptured and Crippled, New York City, where the writer was formerly house surgeon, they treat on an average about four thousand patients a year having ruptures. The general plan of treatment at that institution in all reducible cases, except umbilical and ventral, is support by means of a steel spring truss, using pressure as light as consistent with the effective control of the hernia. This truss, known as the "Knight" truss, is the support generally employed. It is easy of application and is quite inexpensive. It differs from those usually sold at the shops in that it is an "opposite side" truss,—*i.e.*, it passes in front of the pelvis to the rupture from the opposite side of the body. It passes three-fourths around the body, and the circumference is completed by means of a strap. The spring is made of imported steel, tempered to a point which permits it to be shaped to the contour of the body. The steel band is covered with rubber tubing, and at the end is a shank at right angles to the band, to which is attached a soft wood pad one and one-half to two inches in diameter covered with chamois-skin. The "spiral spring" truss is used some, also the "Seeley" and the "Penfield" celluloid, but the latter are not so efficient in the severer forms of hernia. In those cases that are quite difficult to hold the "Hood" truss is used. This is a very neat and comfortable truss, but is too expensive for clinical purposes. In over three-fourths of the cases the "Knight" truss is found quite efficient, and this combined with its cheapness makes it the truss *par excellence*. Dr. S. E. Milliken, formerly assistant surgeon to the hospital, devised a truss to hold the comparatively few that could not be held by the above-named trusses. It is a combination of the "Knight" and "Hood" trusses, and is quite efficient even in nearly all the worst cases.

Umbilical herniæ in children are treated by means of a small pad or wooden button held in place by strips of rubber adhesive plaster. The plaster need not be changed oftener than once in ten days unless excoriations are produced. A large per cent. of the cases of umbilical hernia in children are cured by this method.

Femoral hernia exists so rarely in children and is so easily held that little need be said of this form. The "spiral spring" and the "Knight" truss will usually answer the purpose. Let me here say that it is not sufficient on making the diagnosis of rupture to send patients to an instrument-maker, leaving the whole after-treatment to his judgment. The physician should fit the truss, or at least see that it is done properly. An ill-fitting truss is worse than none at all. A child I recently saw where the fitting had been done by one of the quack "truss specialists" had as the result of a badly-fitting truss an ulcer of quite severe grade at the point of pressure. The pressure should be light as possible consistent with security, and should be over the internal ring. As it is much more difficult to fit and control a rupture in a child than in an adult, therefore special directions should be given to the parents,—the need of always having the pad in place, that the child should never be without the truss, that the parts be kept clean to prevent excoriations, in fact, the more explicit the instructions the more apt they are to be carried out.

Dr. W. B. De Garmo, of New York, gave the results of mechanical treatment of hernia (*New York Medical Journal,* March 3, 1888, p. 236–37) in one thousand cases in private practice; over one-fourth of the entire number were dismissed as cured;—*i.e.,* one-fourth having remained so for over six months without support; one-third were improved,—*i.e.,* were able to wear a lighter truss than at commencement of treatment and with comfort. About twelve per cent. of Dr. De Garmo's cases were under five years of age. He believes that a large per cent. of herniæ occurring before middle age can be cured by early mechanical support.

Dr. W. T. Bull, of New York, takes a moderately conservative view of mechanical treatment. He believes that a certain number of favorable cases, especially in children and young adults, are cured, and permanently so, by wearing a truss for a longer or shorter term; but what the proportion is that are so cured he is unwilling to estimate. He further states that a larger number of cases are found in which the hernia is perfectly controlled by a truss with but slight, if any, inconvenience to the wearer. But there remains another class of cases in which the truss fails to hold completely, on account of adherent or irreducible omentum; two hundred and ninety-eight such cases were observed at the Hospital for Ruptured and Crippled in a single year, of which ninety-three were in women and children.

3. *Operative Measures.*—The question that first suggests itself to us is, What cases shall be reserved for operative treatment? All agree that operation is required in strangulated and irreducible hernia; further than this there is considerable difference of opinion. It would appear that Mr.

Spanton, an Englishman, would have us operate for radical cure in a large per cent. of cases. Marcy, of Boston, in his recent work, "Anatomy and Surgical Treatment of Hernia," page 378, quotes Mr. Spanton as saying, "If it is possible to effect the cure of rupture early in life (thereby eliminating at once one-eighth of the whole number of cases) by an operation which is both safe and efficient, we are led to inquire, in the words of Sir Spencer Wells, 'Whether it may not be better to operate even on young children than to expose them for several years to the inconvenience of a truss, with the possibility that, after all, a radical cure may not be obtained.'" Dr. Marcy's comments on the above are, "The knowledge and adoption of antiseptic operative measures which have become general since the date of Mr. Spanton's writing (International Medical Congress, 1881) gives yet more force to his earnest plea in behalf of a large class of helpless sufferers. If by mechanical means we cannot effect a cure, it is our duty to operate." Dr. W. T. Bull, of New York, classifies those requiring operation as follows: 1. Cases of adherent omentum. 2. Cases of hernia complicated with reducible hydrocele. 3. Cases of irreducible and strangulated hernia.

"With certain surgeons of high authority we may add another class, —viz., all cases which from various reasons are unable to command the large amount of care required for successful mechanical treatment."

Leaving the subject of strangulated hernia and taxis out of consideration, I desire to make the following comments on the subject of the operation for radical cure: The operation should be done under the strictest possible antiseptic precautions. Great care should be taken in the dissecting out of the sac, also in the separation and handling of the spermatic cord. It is usually best to open the sac and examine its contents. The sac should be tied off well down in the wound, the external portion removed and the stump returned into abdominal cavity. The aim should then be to reform the inguinal canal to as nearly its normal length as possible. The deeper parts should then be brought together by buried sutures and the skin wound according to the method described by Marcy. The wound being dressed antiseptically, over all should be applied a plaster-of-Paris spica from the ankle to the umbilicus. Dr. Wm. B. Coley, of New York, has been using the plaster-of-Paris covering during the past year at the Hospital for Ruptured and Crippled, with excellent results, and he attributes the quick healing to the absolute rest which it imposes on the parts. The casing is left on for eight days, when the wound is dressed for the first time.

Results of Operative Measures.—Heaton's method of injecting quercus alba is so almost universally a failure to cure permanently that it is pretty generally given up. I have seen it used in a number of cases, with failure in about all.

Of 16 cutting operations for radical cure performed at the Hospital for Ruptured and Crippled in 1889 and 1890 during my service, 6 relapsed the first year and 2 others later. Part were by the Socin and part by the Czerny method. Dr. Coley, of New York, reports 40 cases of operations on chil-

dren during 1891–92 by the Bassini method. Of these 40 cases but one has relapsed, and in this case there was prolonged suppuration. Bassini has reported 262 operations by this method, with 1 death. Of these, 247 operations were traced; 47 were without relapse after two years, and 103 had no recurrence for periods varying from one to four and one-half years after the operation.

Championniere reports 275 cases with 2 deaths; 112 have been kept under observation; 30 have gone two years without relapse, and 11 have remained solid for four years and over.

AN IMPROVED CELL OF GLASS AND CELLULOID FOR THE PRESERVATION AND EXHIBITION OF MACROSCOPIC EYE-SPECIMENS.[1]

BY CHARLES A. OLIVER, A.M., M.D.,

One of the Attending Surgeons to Wills Eye Hospital; Fellow of the College of Physicians of Philadelphia, etc.

THE fact of having had difficulty in the preservation of valuable specimens of the eye in the ordinary cells of glass and wood, by reason of the entrance of air to the upper part of the cell where the specimen is generally situated, has induced the writer to attempt to overcome this disadvantage by the employment of an impermeable base and an elevated floor, so arranged that the joint between the base and the glass top must necessarily be air-tight.

After several unsuccessful attempts, the present form, as shown in the accompanying sketches, which are one-half natural size, has, for the following reasons, been considered the best that could be adopted for the purpose:

1. The containing power of the cell is quite great, thus allowing large specimens, as, for instance, pathologically distended globes and eyeballs with adherent extra-ocular tissue, to be placed in the best position for proper macroscopic study. (Fig. 1.)

2. The top of the cell is made of a carefully-ground cylinder of clear, transparent glass that is perfectly free from blemish. (Fig. 2.)

3. The base, which is composed of a strong, durable piece of unpolished celluloid, has been made circular. A broad bevelled edge has been given to it so as to permit of marking the nature and character of the specimen by lead-pencil, ink, or wax-pencil. (Fig. 3.)

4. The external surface of the top of the cell has been made absolutely

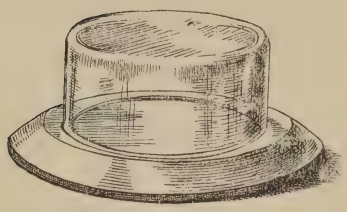
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[1] Read before the section on Ophthalmology of the College of Physicians of Philadelphia, January 16, 1894.

flat, thus avoiding any distortion of the contained specimen by lenticular aberration.

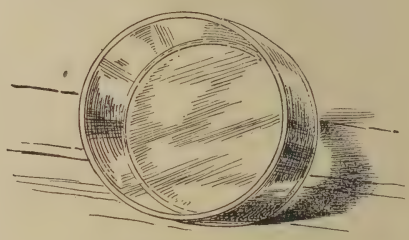
5. The parallel surfaces of the parts of the cell through which the most important portions of the contained specimen are to be studied, are so arranged as to allow any exposed part of the specimen that is desired to be more carefully studied to be placed under any series of magnifying powers that are not too strong to necessitate a closer encroachment of the lenses

Fig. 1.



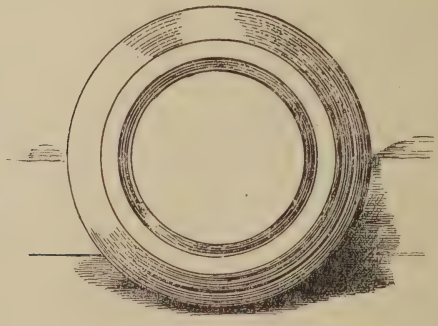
Appearance of the cell.

Fig. 2.



Top of the cell.

Fig. 3.



Bottom of the cell.

than that which is obtainable with the ordinary dissecting microscope. This plan of a single movable lens for any and all of the specimens at command is much cheaper, more convenient of manipulation during study, and avoids any lessening of illumination and apparent distortion of the various parts of the specimen, which most certainly would take place with any of the fixed forms of convex lenses that are either ground, blown, or cemented upon the top surface of the glass cell.

6. The floor of the cell has been raised into the cavity of the cell. This, which insures a perfect filling of the cell with the preservative menstruum, has been accomplished by sinking a deep and broad circular groove (Fig. 3) into the top of the base, so as to allow the free circular edge of the glass cell to sink deeply into the top of the base when the glass cell and specimen are placed in exact position, thus forcing the specimen further towards the top of the cell and insuring a perfect filling of the cavity.

7. A deep and broad circular groove has been made in the top of the base. This, when the glass cell is fitted into it, serves to make an air-tight

joint, thus preventing either the entrance of air into the cavity of the cell or the exit of any water that might form by evaporation from the gelatin.

If further protection is desired, a ring of some resinous cement, as asphalt or Canada balsam, might be made around the glass at its junction with the base, on the plan of an ordinary microscopical mount; or, if preferred, Lloyd Owen's method of embedding the specimen in a stratum of glycerin-jelly, under which there is a layer of a mixture of the jelly and oxide of zinc, can be employed.[1]

Mr. Edward Pennock, of the Microscopical Department of Queen & Co., 1010 Chestnut Street, Philadelphia, Pennsylvania, has kindly undertaken the manufacture of the cells.

SURGERY OF THE TRIFACIAL NERVE.[2]

BY H. REINEKING, M.D.,

Sheboygan, Wisconsin.

SURGICAL operations for the relief of intractable neuralgias of the trifacial nerve are said to have been performed as early as the fifteenth century, but the first case of nerve-section of which there seems to be any authentic record is that of Marchal, surgeon to Louis XIV. Bell, in 1836, wrote on the effects of nerve-section, and Hufeland, writing in 1836, mentions neurotomy as a very uncertain remedial means,—indications that this operation was practised in the early part of the present century.

The aim which our forefathers had in view in destroying the continuity of a nerve-trunk in cases of neuralgia of peripheral origin, was to interrupt the communication between the diseased periphery and the central perceptive organ,—the brain. They also recognized in it a means of producing an alterative and tonic effect on the central nervous system, which effect, together with the condition of rest from external impressions, explained the beneficial effects of the operation in cases of central origin. Up to the middle of the present century, simple cross-section of the nerve, or neurotomy, performed either subcutaneously or by open operation, was the only recognized procedure dealing with the nerve-trunk directly. That the results should have been unsatisfactory, and the relief, at the best, but temporary, is, with our present knowledge of nerve regeneration, not difficult to understand.

When, thanks to the researches of Walker, published in 1852, a knowl-

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[1] The writer prefers equal parts of a pure, almost colorless, high grade of gelatin, glycerin, and distilled water.

[2] Read before the Wisconsin State Medical Society.

edge of the regenerative power of nerve-tissue had been obtained, surgeons were not slow to utilize this knowledge and to devise procedures calculated to prevent the reuniting of the peripheral with the central portions of the nerve. To this end the operation of neurectomy, the excision of a portion of the nerve-trunk, was established, and has in various modifications ever since been the recognized resort of the physician in severe cases of neuralgia of the trifacial nerve that refuse to yield to other means of relief.

Among those to whose services the establishing of this operation and improvements in its technique were largely due, Wagner, of Germany, Schuh, of Austria, Patruban, of France, and Carnochan and J. R. Wood, of our own country, deserve prominent mention. Quite recently, Rose, of London, E. Andrews, of Chicago, and Hartley, of New York, have performed very essential modifications of the operation, by attacking the nerve prior to its division into three main branches, viz.: at the point where it forms the Gasserian or semilunar ganglion. These operations, as well as other important modifications, will be noticed more in detail further on.

When the operation of nerve-stretching, introduced by Billroth and Nussbaum about twenty years ago, became generally adopted, this treatment was naturally also tried in painful affections of the fifth pair of cranial nerves. While it was almost invariably followed by temporary relief, this was, as a rule, of short duration as compared with that obtained after neurectomy. Of eleven cases operated on by Hahn, of Berlin, eight relapsed in from six to eight months. Although still recommended by a few authorities as a primary surgical resort, nerve-stretching is at present rarely practised in cases of trifacial neuralgia, except as an adjuvant or complementary procedure in connection with neurectomy. Judging from our knowledge of its effects in other localities, and the good temporary results following its application in cases of trifacial neuralgia, there can be no doubt as to its great utility when practised in the manner just mentioned, and a combination of these two procedures has been strongly advised by several eminent operators.

Owing to the fact that, even after the removal of quite extensive portions of the nerve-trunks, recurrences of the painful affections for which the operations were performed were quite common, in fact, the rule rather than the exception, various modifications have from time to time been recommended and practised. The general aim of these modifications may be said to be the removal of a portion of the nerve-trunk as near to its origin from the brain as possible. Yet the views which led different operators to devise these modifications, and their theories regarding the manner in which the good results were brought about, have been quite variable. The older French surgeons sought the cause of pain in pressure affecting the nerves on their passage through their bony canals, and devised operations for dissecting them at points between their emergence from the skull and their entrance into these canals. Carnochan removed the spheno-palatine ganglion, seeing in it a nerve-centre constantly supplying morbid nervous

sensibility, as a galvanic battery supplies electrical force, and, therefore, regarding its removal as the "key to the operation."

Quite different from these views are the observations upon which Prof. Andrews bases his argument in favor of removal of the Gasserian ganglion. Regarding these painful affections as due to progressive peripheral neuritis, "which probably, in the great majority of cases, reaches the semilunar ganglion, but rarely goes beyond, just as in neuritis of an intercostal nerve, which causes herpes zoster, the inflammation reaches the ganglion along the posterior root, but rarely goes beyond the spinal cord," he destroys the ganglion with a view to removing the source of pain. The limitation of the neuritis to the portion of the nerve lying within, and peripheral to, the semilunar ganglion is supposed to be due to structural differences between the portion mentioned and that extending from the ganglion to the brain.

It is not my intention to review in detail the different modes of procedure that have been devised and recommended by different operators for the more extensive resections, for to do this would require more time than I wish to occupy, and they can be best studied by referring to the original descriptions and illustrations of their inventors. It will be interesting, however, to consider for a moment a few of the more important modifications, and, if possible, to arrive at some conclusion as to their comparative values, and the class of cases to which each of them seems to be especially applicable.

Unfortunately, statistics, the source to which we would naturally turn for aid in such an investigation, do not furnish us sufficiently complete and reliable data for unfailing guidance. Too many cases are reported before sufficient time has expired to permit of any definite judgment as to their final outcome, and in many others the exact method of operation cannot be determined from the reports. Still, sufficient information is contained in the literature of the subject, that, studying in connection with anatomical considerations, we may obtain some tolerably clear ideas as to the best mode of procedure in a given case.

Carnochan's operation consists in the resection of the infra-orbital nerve and Meckel's ganglion, exposed by opening the antrum of Highmore, breaking away the floor of the infra-orbital canal and perforating the posterior wall of the antrum. Compared with the less extensive resections, it must be admitted that its results have been slightly more favorable, as shown by Fowler in his table of eighty-three cases published in 1886. The average duration of relief after neurectomy, *with* removal of Meckel's ganglion, was one year, five months, and sixteen days; *without* removal of the ganglion, one year, three months, and fifteen days, a difference, in favor of Carnochan's operation, of two months and one day. On the other hand, the number of cases in which the relief lasted over three years was larger in that class in which the ganglion was not removed. Carnochan's operation involves the opening of the antrum of Highmore, an occurrence often followed by long-continued suppuration and tedious healing. The opera-

tion is apt to prove tedious and difficult, and the finding of the ganglion sometimes impossible, from want of sufficient light to identify the parts, and on account of hemorrhage. The latter is sometimes alarming, and has necessitated ligature of the common carotid artery. The true explanation of any advantage of the operation over the less extensive resection is no doubt to be found in the fact that the removal of the ganglion by Carnochan's method necessarily implies a thorough removal or destruction of the branches of the superior maxillary nerve back to and within the sphenomaxillary fossa. It is more than doubtful whether any benefit would result from the removal of Meckel's ganglion without neurectomy of the nerve-trunk, if such were possible. The fact is, however, that a complete resection of the nerve and its branches up to the foramen rotundum is impossible without destroying the ganglion in question. It should also be remembered that in those cases in which the ganglion was not removed, it is doubtful whether as much of the nerve-trunk was excised as could have been done without materially prolonging the operation or increasing its gravity.

In this connection, I wish to direct your attention to a few points that have suggested themselves to me in the study of this subject. Thiersch has recommended what he calls nerve-extraction, carried out by exposing the nerve, liberating it from its surroundings, seizing it with forceps especially devised for that purpose, and slowly twisting it upon itself or around the blades of the forceps until it gives way. The advantage of this procedure over the older method of seizing the nerve and cutting it off with curved scissors is at once apparent. It is easy to see that the nerve can be seized fully as far back as it could be severed with scissors, and that the effects of slow torsion and traction must extend to a very considerable distance beyond the point seized there can be no doubt. In fact, cases have been reported in which, by means of this manœuvre, even the posterior dental nerves were torn out of their bony canals. That a combination of this torsion and stretching of the central stump with the less formidable methods of neurectomy would greatly enhance the good results of the latter seems almost certain. Heuter suggested bruising the ends of the nerve-stumps for the purpose of preventing their reunion, but feared that this might produce neuritis, which, by progressing to the brain, would cause a repetition of the neuralgia. Fowler believes that the branches of the trifacial are so weak and fragile that the effects of stretching could at best be exerted for a short distance only. But neither of these objections seems to be borne out by experience.

Another detail, and one of which little mention is made in the literature of the subject, is the careful extracting or dissecting-out of the smaller peripheral branches, followed out to the greatest possible extent, a procedure that can be carried out with remarkable ease and to a surprising extent, especially in the case of the supra-orbital nerve. As regeneration is known to proceed from the centrally connected portion only, this procedure cer-

tainly appears to be a rational means of preventing the reuniting of the stumps, and of permanently diminishing the innervation of the parts.

In case of supra-orbital neuralgia, and in neuralgias of the infra-orbital, not involving the posterior dental branches, it would seem that these procedures should be thoroughly tried before resorting to the more extensive and difficult ones that require the exposure of the spheno-maxillary fossa. Where the posterior dental branches are involved, the question might arise as to whether it would not be best to proceed at once with the more extensive operation; but in view of the fact that the latter can by no means be regarded as a safeguard against a recurrence, a resort to the less formidable operation seems fully justifiable in all primary cases. I believe that here, too, a thorough carrying out of Thiersch's method will prove more effective than has been the case in the ordinary nerve-resections. In case of failure or recurrence, recourse may be had to Carnochan's method, or the spheno-maxillary fossa may be opened by way of the zygomatic fossa, and the nerve excised in this locality, without interference with the peripheral branches or the orbit. Osteoplastic resection of the superior maxillary bone has also been practised for the purpose of thorough neurectomy of the superior maxillary nerve. The dangers and difficulties of this procedure are so manifest that its performance appears hardly justifiable in these cases, and it does not appear to have ever been extensively practised. Koenig, however, advises it in cases where other methods have failed or for the purpose of gaining more room when thorough resection proves impossible by other procedures.

The method of gaining access to the spheno-maxillary fossa by means of temporary resection of the zygoma and division of the temporal muscle, or of the coronoid process of the inferior maxillary bone, first practised by Leucke and since modified in many minor points, is one that has to a great extent supplanted the operations by way of the superior maxillary bone. Its advantages are a wider field of operation, better control of hemorrhage, easier access to the foramina at the base of the skull, the avoidance of long-continued suppuration from injury and infection of the antrum, and the fact that it gives access to both the superior and inferior maxillary nerves. In the case of neurectomy of the superior maxillary it has the disadvantage that only a comparatively short piece of the nerve can be removed, owing to the limited extent to which it can be reached, implying greater danger of reunion of the ends, and operators have resorted to such devices as turning the divided ends back upon themselves, or pushing the central stump up into the foramen rotundum, in order to prevent this occurrence.

In connection with resection of the inferior maxillary nerve, quite a number of different procedures have been devised and practised. The inferior dental branch has been attacked at the mental foramen, in its course through the inferior dental canal, and at points between its entrance into this canal and its emergence from the foramen ovale. In the dental canal it is exposed by trephining or chiselling through the external plate of the

horizontal ramus; above its entrance into the canal it is reached by means of an opening through the ascending ramus, just above, or at the seat of the inferior dental foramen. The latter method gives by far the better opportunity for effective resection of the dental, and has the further advantage of providing free access to the lingual branch. Nussbaum is reported to have resected four to five inches of the inferior dental by this method. Both branches have also been resected through the mouth; but this method, while quite applicable to lingual, seems hardly justifiable in case of the dental branch, on account of want of room, inability to see anything, the consequent necessity of being aided almost entirely by the sense of touch, and the liability to troublesome hemorrhage. It would seem that, in case of resection of the inferior maxillary nerve, the operation through the zygomatic fossa should be especially applicable, as by this method a long portion of both branches up to the foramen ovale can be easily reached and thoroughly exposed and removed. Still, in affections of the dental branch alone, the operations through the lower jaw have been in favor, and will probably continue so, as interfering less with the muscles concerned in mastication and implying less danger of injury to important blood-vessels.

Within the last three years two important and radical modifications of neurectomy have been devised and practised, and it may be safely said that with these operations the tendency to perform the resections at as central a point as possible has reached its utmost limit. I refer to the removal of the Gasserian ganglion, and to intracranial neurectomy.

Victor Horsley seems to have been the first to attempt intracranial neurectomy. He attacked the fifth cranial nerve at or near its point of emergence from the pons Varolii. The case terminated fatally.

While Professor Andrews was engaged in investigations on the cadaver, with a view to perfecting a plan for the removal of this ganglion, Rose performed the operation on a living patient, in April, 1890, since which time he has operated on seven cases, with one death from septic meningitis, and one case of recurrence of pain, which, however, was less severe than before the operation. Andrews has operated on two cases, both of which recovered and were completely relieved. Rose and Andrews reached the ganglion by temporary resection of the zygoma and the coronoid process of the lower jaw, exposing the lower surface of the sphenoid bone, just external to and in front of the foramen ovale, and trephining through this bone. They do not attempt a complete removal or destruction of the ganglion, but scoop out the portion of it corresponding to the superior and inferior maxillary nerves with a small spoon.

Hartley, of New York, performed an intracranial neurectomy on the second and third divisions of the trifacial nerve. He opened the middle fossa of the skull by forming a flap shaped like the Greek letter omega and consisting of skin, muscle, periosteum, and bone, the base and lower margin of the flap corresponding to the zygoma. The brain was then

raised, the nerves separated from the dura mater, excised, and the peripheral stumps pushed into the round and oval foramina respectively, in order to lessen the chances of reunion.

Judging from anatomical considerations, the latter operation would seem to be the easier one to perform, but it has the disadvantage that it allows of a less extensive resection, being limited to the cranial cavity. Further experience alone can demonstrate the comparative safety and effectiveness of the methods. It is safe to predict, however, that they will be reserved for the most refractory and severe cases, especially those in which both the superior and inferior divisions are affected. The possibility of serious damage to the eye, of formidable hemorrhage, and of septic infection of the meninges, will, no doubt, prevent their general adoption in primary cases, and they will continue to be reserved for the more obstinate and extensive ones.

(Since writing the above, I received the last (May, 1893) number of the *Annals of Surgery*, in which Dr. Hartley publishes an account of his case, together with a synopsis of the reports of four other cases of intracranial neurectomies. Of these, one was performed by Fedor Krause, two by Charles McBurney, and one by J. B. Roberts. All of these cases recovered without the occurrence of any grave general disturbances, and remained completely relieved at the time of report. The amount of nerve-substance removed was comparatively small in all of these cases, and in McBurney's first operation the nerves seem to have been simply divided above their foramina. The final outcome of these cases may, therefore, be watched with a good deal of interest, as the nerve-stumps must have been left in a comparatively favorable condition for regeneration and reunion.)

Ligation of the common carotid artery for trifacial neuralgia has been practised by Trousseau, Nussbaum, Patruban, Hutchinson, and others, with varying results as to permanent relief. The immediate and remote dangers of this operation are such that it cannot be said to be justifiable except where all other means have been tried and found ineffective.

I add the report of a case which, besides presenting some interesting clinical peculiarities, may serve to exemplify some of the suggestions above made:

Mr. J. B. M——, aged sixty-three years, farmer, native of Germany, consulted me April 13, 1892. He is a man of large frame and robust constitution, and has never had malaria, syphilis, or any serious general disease. The family history is good, except that his mother died from cancer of the breast at the age of sixty-four years. About ten years ago, he began to have attacks of severe pain in the right supra-orbital region, which have continued ever since, the attacks having gradually increased in frequency, duration, severity, and extent. Five or six years ago, the right infra-orbital region and cheek down to the lip became similarly affected, and shortly after this the right occipital region. In the last two or three years, the pain has extended to the upper molar teeth, but has in this

locality never become severe. There is no pain in the region supplied by the inferior maxillary nerve, nor in the palate. The present attack has lasted since the fall of 1891, and he claims not to have had a half-hour's continuous sleep during that time. The pain generally starts in the frontal region, sometimes in the infra-orbital, and is never first in the occipital region. It is always worse at night. The patient, during the severe attacks of pain, presents a most piteous sight, as it is accompanied with twitching of the muscles of the parts affected, which he attempts to control by throwing his hands to his face and head and making pressure. Various remedial means have been tried, but all without appreciable benefit. In short, the case is one of very severe chronic intractable neuralgia of some of the branches of the ophthalmic and superior maxillary divisions of the trifacial nerve, accompanied by less severe but equally obstinate neuralgia in the region of the great occipital nerve. His teeth are in an excellent condition, and there is no evidence of abnormalities of the eyes or ears, or of any other peripheral cause of the trouble. The functions of the brain, as well as of all the other important organs, seem unimpaired. It was decided to make a neurectomy of the frontal and infra-orbital nerves at one sitting, and to operate on the great occipital later, if necessary.

April 16, 1892, the following operation was made: an incision about one and one-half inches in length was made through the eyebrow along the supra-orbital ridge, its centre corresponding to the location of the supra-orbital foramen. The nerve was exposed without difficulty just at its point of emergence from the supra-orbital foramen and thoroughly liberated by chiselling away a small portion of the ridge, and separated from its surroundings as far back in the orbit as possible. A thick thread was now tied around the nerve for the purpose of making traction, and great pains taken in thoroughly following up the branches of distribution in the muscles and skin of the forehead.

It was surprising to what an extent this could be carried out by means of traction and a little dissecting. Some of the finer branches were removed for over one and one-half inches. The trunk was then followed up and isolated as far back as possible, seized with forceps having slender, slightly serrated branches, and slowly twisted upon itself until it gave way under slight traction. Here again it was surprising how long the twisting had to be continued before the nerve gave way, and the part removed must have included nearly all of its orbital portion. The wound was closed without drainage. The supra-trochlear branch was not found, but the tissues in its usual course were divided in several places down to the bone.

The infra-orbital nerve was then exposed by the usual curved horizontal incision below the infra-orbital ridge, but in order to follow up its branches it was found necessary to join this incision by a vertical one made from the foramen downward and slightly outward. The extraction of the smaller branches was found far more difficult here than in the case of the supra-orbital. The roof of the infra-orbital canal was then removed with the

chisel, the contents of the orbit being carefully raised from its floor, the nerve-trunk isolated, grasped and twisted as before described. Here, too, the resistance was surprising, and, although it gave way a short distance beyond the forceps, it was evident that the effect of twisting must have reached far beyond the point grasped. Having unintentionally made a small opening through the anterior wall of the antrum of Highmore, a drainage-tube was inserted into this cavity, and left there three or four days. For about three days after the operation, the patient experienced some pain in the parts before affected. After that, all pain, including that in the occipital region, disappeared entirely, and has not returned up to date of writing. The wound healed by first intention, and the patient left for home on the eleventh day after the operation.

An interesting clinical feature of this case is the simultaneous affection of the trifacial and great occipital nerves, an occurrence not explained by any anatomical connection between the two nerves or their roots of origin. As the occipital pain disappeared promptly after the operation on the trifacial, it was probably of reflex character.

The points in the treatment which this case illustrates, and upon which I would lay especial stress, in these more conservative operations on the supra- and infra-orbital nerves, are, *first*, thorough following up, extracting, and dissecting-out of the peripheral, muscular, and cutaneous branches; *second*, slow torsion and gentle stretching of the central stump until it gives way. This is certain to destroy the function of the nerve for some distance beyond the point grasped, and to leave the stump in an unfavorable condition for regeneration, and will sometimes be the means of extracting it up to its point of exit from the skull.

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RHINOPHYMA: A CASE IN WHICH OPERATION PRODUCED A GOOD RESULT; A NEW PATHOLOGICAL CONDITION FOUND.[1]

BY A. H. OHMANN-DUMESNIL, M.D.,
St. Louis, Mo.

Rhinophyma is by no means a rare condition, and from this fact it would be safe to assume that its successful treatment should be clearly and definitely laid down. Yet the records of cases do not seem to justify such a conclusion. When we take into consideration the total number of cases, and those which are operated upon, the percentage of the latter is not so large as we should be led to expect. Furthermore, those who do operate seem to have either no desire to report their results, or a reluctance on account of the imperfect condition which follows; so that, taken altogether, literature is far from teeming with such reports. This is one of the reasons why I have ventured to give a brief account of a case in which the final outcome was such as to make it worthy of recital.

In general, it may be premised that the *fons et origo* of rhinophyma—acne rosacea—is a disease by no means as easy to cure as we are led to believe if we are guided by the generalizations of those who have written text-books on dermatology. We find cases which are of the most stubborn character, and characterized by a chronicity which is disheartening alike to patient and physician. When we add to this an aggravation caused by indulgence in alcoholics, we have a still more complicated state of affairs. The patient, despairing of ever getting well, and clinging to his alcoholic habits, will, in a certain length of time, find that he has acquired that peculiar hypertrophy of the cutaneous structures of his nose which is known as rhinophyma,—the *Pfundnase* of the Germans. The degree of deformity differs widely in different cases, but is of such a marked character as to attract the attention of every one. The tendency which exists for the formation of dense fibrous tissue does not seem to be uniform. In some, it ceases after a certain length of time, and a sudden stand-still takes place. In others, it continues to grow, slowly it is true, until a deformity supervenes which is truly appalling in its dimensions,—the pendulous nose with its rugous, shining, red surface, gaping orifices, and lobules which have been so graphically represented. I have never seen this state of affairs except in men, and these were past middle life and known as "stiff" drinkers,

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[1] Read before the Section on Dermatology and Syphilography of the First Pan-American Medical Congress, held at Washington, D.C., September 5 to 8, 1893.

upon whom the condition had crept always unperceived, so gradual was the process in its evolution. A peculiarity I have also noticed is, that they are generally averse to any form of treatment.

I will not attempt to give a description of rhinophyma, for its characteristics are so well known to dermatologists that it would certainly appear as a work of supererogation. There is but one point to which I desire to draw attention, which is, that in general we may divide the trouble into two varieties,—viz., that in which we find one general hypertrophic mass, and that in which there are distinct lobes formed, which are comparatively widely separated and markedly distinct. This difference has some little importance as bearing upon the treatment, and possibly also upon the pathological evolution of the mass. Not only this, but it may possibly have a further bearing upon the histological findings in the different forms, and there is a possibility of opening up a new field of investigation for pathologists, as I shall endeavor to point out as I get farther along in this paper. The entire subject is one replete with interest to the practising dermatologist, and offers an interesting field for more extended observation and study, not to mention more improved methods of treatment for the purpose of attaining final results of a successful nature.

The case which I am about to describe is one which possesses certain features of interest, both from a clinical and pathological point of view. Moreover, the result of the surgical measures adopted is such as to prove encouraging in the treatment of future cases. So far as the pathological condition observed is concerned, it is one which has hitherto not been described, so far as I have been able to determine, and it is one of more than passing interest in regard to the processes which occur in the integument; for the anatomical groundwork of the skin itself is a *sine qua non* of the changes which are observed. Without any further preliminary remarks, I will proceed to relate the salient features of the case, as well as outline the principal steps of the operation, which proved so successful in its final result.

Case.—Mr. X., about seventy-two years of age at the time he sought relief for his trouble (1890), was of a robust constitution, and had always enjoyed the best of health. He had been in the habit of indulging in alcoholics, this being in a large measure due to his occupation, which was that of a saloon-keeper. This indulgence brought on an acne rosacea to which he paid but little attention, as all those similarly affected are prone to do. He first noticed an enlargement of his nose in 1884, but did not pay much attention to this, regarding it as a very trivial matter. This enlargement, however, progressed slowly but steadily, and he was finally forced to seek relief, not on account of its appearance, but rather for the inconvenience occasioned, which, to my knowledge, has not been mentioned heretofore by any author. The hypertrophy was of such a character, and so much tissue was developed in consequence of it, that its mass was a positive weight, and pressed perceptibly upon the nostrils. This pressure

became such that the patient could no longer breathe comfortably. The weight of the entire tumor became of such magnitude as to produce a marked stenosis of the nostrils, forcing respiration by the mouth, a condition which was only uncomfortable at first, but finally became intolerable.

The patient presented the following appearance: His general condition was that of good health, with a tendency to stoutness; his complexion was florid, and hair gray; a sparse beard occupied the lower part of his face; he looked worried and as if he had lost sleep. In fact, he did not have the look of ease one would expect to observe in an individual of his build and in his social condition and circumstances. His nose was enormously hypertrophied, constituting a veritable tumor. The mass consisted of three principal lobes, well-defined from each other, as shown in Fig. 1. There were one central and two lateral lobes, attached at their bases by what appeared to be rather long and narrow pedicles. Each lateral mass was pear-shaped, and the central one had much the appearance of an inverted pyramid. Taken altogether, the entire growth would make a large handful, and the entire weight was very nearly two pounds. The surface of the integument appeared coarse and irregular, the skin being notably thickened, and the openings of the sebaceous ducts patulous. To the touch the mass felt hard, and to a certain degree it was non-sensitive. The color was of a violaceous tinge, inclining to a red, and the entire surface had a shining appearance. The upper lip was entirely hidden by the mass, and even the lower lip was encroached upon, rendering speech somewhat indistinct. When breathing through the nostrils was attempted, the act of respiration immediately took place through the mouth.

It is self-evident that medical treatment in such a case would prove of no avail. There is but one course to pursue, which is the employment of surgical measures. The removal of the entire mass by the knife is the only course to pursue, as I will endeavor to show farther on, and it was resorted to in the case which is detailed.

The operation performed was about as follows: The lateral lobes of the tumor mass were removed, a small flap of the integument of each was left to cover the denuded surface. In each case this flap was obtained from the lower portion, and was shaved thin and then turned up, so as to bring the line of stitches at about that portion of the nose which corresponds to the sulcus of the ala. In the case of the middle lobe the same course was pursued, and, of course, the line of sutures was directly across the nose. The dissection of the skin-flaps was very carefully done, so as to have as thin an integument as would be consistent with the proper nutrition of the parts. The stitches were fine and numerous, so as to avoid a scar as much as possible, a result which was pretty well accomplished, as may be seen in Fig. 2, representing the case after recovery. Union by first intention took place. This may have been due to the fact that after the sutures had been made the dressing consisted of iodoform collodion. A slight deformity, one, however, which would hardly be noticed, occurred. This consisted

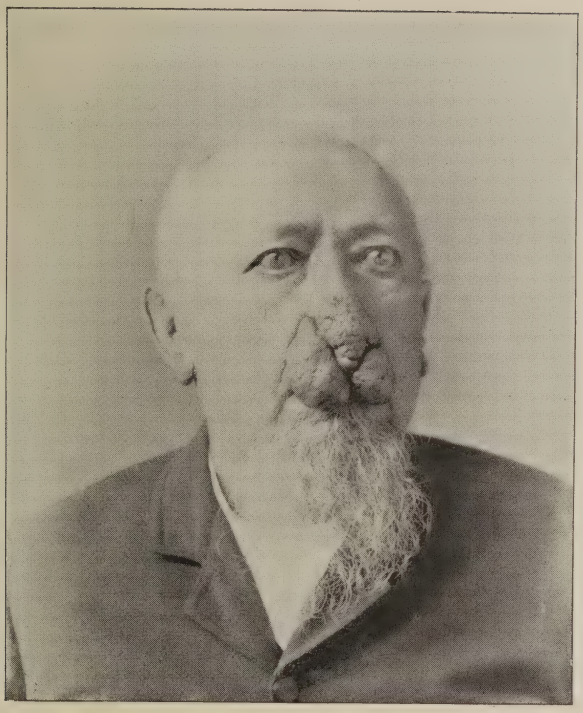


FIG. 1.—Case of rhinophyma before operation.

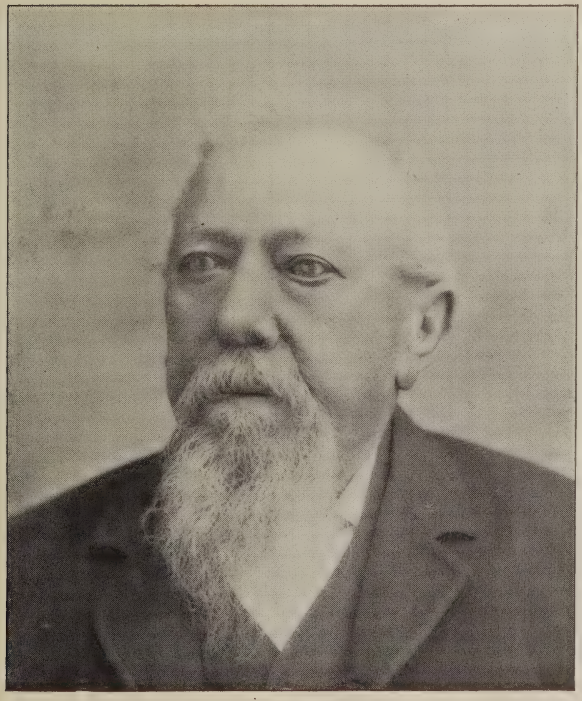


FIG. 2.—Same case after operation.

in a very slight tilting up of the openings of the nostrils, due, no doubt, to the contraction of the tissues during the process of cicatrization. This could hardly be avoided under the circumstances. As I have stated, it amounted to but little, and merely points to the necessity of allowing for contraction of the integument in these cases, as in all other plastic operations. At best, however, it is quite a difficult matter to estimate exactly the amount of skin required in plastic operations of this character, and in such cases as the one before us the exercise of a little economy is preferable to the exhibition of too much generosity, as any redundant tissue might be liable to take on the hypertrophic process rapidly, and lead to a partial, if not a total, reproduction of the original trouble. The difference, not only in the appearance of the purely physical portion of the face but in the expression indicative of the patient's *morale,* is so evident upon comparing the two pictures representative of the state before and after treatment that comment is superfluous.

Before proceeding to a consideration of the pathology of the disease, I desire to say a few words in regard to the operative measures employed. In the ordinary treatment the thermo-cautery is used for the purpose of provoking cicatricial contraction throughout the mass, and thus gradually diminish the size of the tumor. This method is one which is very long; it is also very painful, and it does not give a nice, even result. Dr. Dupré[1] speaks of the manner in which he operated upon a patient in the following words: "The patient being under an anæsthetic, I removed from the immense tumor slices of the fleshy mass as one might slice a melon; I then sutured the raw surfaces and cauterized with the thermo-cautery, and I made a sufficient number of incisions into the lardaceous (?) tissue to bring the organ down to its primitive volume. The sutures were removed on the fifth day. . . . Two months after the operation, we see that the mass has continued to diminish until scarcely a trace of its former condition remains."

Ollier[2] has practised decortication by means of the thermo-cautery, the advantage claimed being the absence of all hemorrhage and a comparatively rapid result.

Hicquet[3] claims to have obtained good results by making punctate cauterizations with the galvano-cautery.

Berger[4] has a preference for the knife. He simply removes the lobes, and obtains good results.

Franz Wings[5] describes a method which consists in removing the entire tumor, removing all the hypertrophied tissue, and leaving only as much as

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[1] La Clinique de Bruxelles, 1891.

[2] Bulletin de la Société de Chirurgie, March 1, 1893.

[3] Revue Internationale de Rhinologie, etc., July, 1892.

[4] Bulletin de la Société de Chirurgie, March, 1893.

[5] Das Rhinophyma und seine Behandlung. Inaugural Dissertation. Berlin, 1889.

will insure a growth over the denuded portion. This growth is large, and is caused by the projecting portions of the sebaceous glands, their ducts aiding in the proliferation of epithelial tissue.

Of course these methods, which are but a moiety of those employed, are no doubt of value, but shelling out the tumor is, in my opinion, the procedure that is most likely to yield the best cosmetic results. Necessarily, great caution must be observed, not only in removing all the hypertrophic tissue, but also to avoid cutting away too much from the under surface of the integumentary tissue. The proper method to accomplish this is by cutting away a sufficient quantity, so as to leave the smallest sebaceous glands intact. In this manner there is much less liability of a recurrence of the disease, and a condition closely approximating the normal is retained, so far as the secretion of the glands is concerned.

Upon macroscopic examination of the excised portion, it appears distinctly fibrous, its density being quite well marked. The skin proper covering this hypertrophied part is thin, being more marked, in this respect, in the side lobes than in the central one. The openings of the sebaceous ducts are large and patulous, more especially in the central lobe. In one lobe there appears what seems to be a large retention cyst, nearly a half-inch in diameter, and filled with fatty material nearly liquefied. A number of smaller cysts of the same nature can also be made out in the same lobe, as well as in the other lateral lobe, but cannot be made out in the central one. These are, clearly, all sebaceous cysts which were originally sebaceous glands, which have become distended by the pressure exerted upon their excretory ducts. Here and there may be seen, quite plainly, enlarged blood-vessels in cross-section, and some portions of the structure seem to indicate the presence of some degenerating process. Upon attempting to cut the tumor, it gives the same sensation as when a fibroid is resected. Such is a brief outline of the macroscopic appearance presented. Before detailing the microscopic findings, it may be as well to give a brief summary of the descriptions furnished by a few competent authorities. Their accounts seem to differ somewhat in details, and it is not unlikely that this discrepancy is due to the fact that each one was necessarily limited to a few specimens in making his observations. In the case which I have related, the various appearances presented agreed pretty well with the descriptions given, so that it may be safely concluded that the microscopic anatomy whilst differing in minor details is of a pretty uniform character. I propose, however, to call attention to one exceptional condition which I have failed to note in the published accounts.

Hans Hebra, who wrote an elaborate paper[1] on rhinophyma, including its microscopic anatomy, states that the sebaceous glands are very numerous and quite large, forming a very prominent element in the pathological condition which is present. It is his opinion that this condition of hyper-

[1] Vierteljahresschrift für Dermatologie und Syphilis, Heft 4, 1881.

trophy of the glands is secondary to the connective-tissue hypertrophy, which by its development occludes and cuts off portions of sebaceous glands, which then go on secreting, and thus produce a retention of sebum, which in turn acts as an irritant, and thus stimulates the tissues to further hypertrophy.

Biesiadecki[1] also found distention of the sebaceous gland accompanied by hypertrophy. He further noted the enlargement and new formation of blood-vessels not only in the superficial tier but also in the branches arising from the corium.

Piffard[2] examined a case operated on by C. Wagner, and found that the horny layer of the skin was scanty, but the rete mucosum thick, with well-formed cells. The papillæ were enlarged in length and breadth, and contained round and fusiform cells. Some sebaceous glands were normal, others were undergoing degenerative changes. The corium itself was greatly thickened, and presented the appearance of a formed tissue.

Bulkley,[3] in describing a case, states that the tumor is composed of closely-woven connective-tissue fibres, embracing relatively large blood-vessels; the rete and epidermis are unchanged, and in this specimen there appears but a single sebaceous gland, not greatly enlarged. Blood-vessels consist of arteries with hypertrophied coats and dilated veins. There is more or less small cell infiltration seen also in the tissue, together with many embryonic cells. In the figure which is given (Fig. 26, page 216, by Elliott) the papillæ have all disappeared; numerous enlarged blood-vessels are shown; the rete is distinct, and the stratum corneum somewhat thinned. No sebaceous glands appear, and a small-celled infiltration is shown here and there throughout the fibrous tissue of the tumor, this tissue appearing to be one with the corium.

Franz Wings[4] gives a very elaborate account of the microscopic investigations made by him. He finds that the epidermis undergoes no changes, nor are there any perceptible alterations to be seen in the subcutaneous connective tissue. It is in the corium that we are to find the hypertrophy. It is so great that in some places he saw the apices of the unaltered papillæ flattened by the pressure exerted by the fibrous tissue lying underneath. The number of the sebaceous glands appears increased, as well as their relative size. The blood-vessels are also enlarged and more numerous. The mass is composed of white fibrous tissue, with a strong infiltration of small round cells. In many places throughout the connective tissue, cells and nuclei could be found. He attributes the formation of the retention cysts to constricting power exerted by the hypertrophy, which cuts off the excretory ducts from the acini, and at the same time obliterates the opening by which the contents of the latter may escape.

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[1] Pathologie und Therapie der Hauskrankheiten, von M. Kaposi, 1883.

[2] Archives of Clinical Surgery, vol. i. p. 21.

[3] Acne and its Treatment, 1885.

[4] Loc. cit.

In making a microscopic examination of the parts removed in the case given, I limited my sections to one lateral lobe, and found that almost every one differed from the other in some particular. All, however, agreed in some general characteristics, which I will proceed briefly to enumerate. The stratum corneum appeared normal, or very slighly thinner than normal, but preserved its characteristics. The stratum mucosum also appeared normal, the papillæ being possibly slightly elongated in some specimens. The cellular structure, however, is quite marked and distinct, the pigmentary layer being remarkably prominent. A slight small-celled infiltration can also be made out. The corium seems to have disappeared and merged into a mass of fibrous tissue, which extends downward for quite a distance until it is lost in the subcutaneous, connective, and adipose tissue. Large blood-vessels are to be seen throughout the mass, and cross-sections show that a distinct hypertrophy of their walls has taken place.

The pigment, which is marked in the columnar layer of the papillæ, is not confined to these cells, but may be found diffused near the apices of the papillæ, and also in the corium immediately surrounding them. In some sections there is almost a superabundance of this coloring material.

The sebaceous glands vary greatly in number in different sections. In some they cannot be made out at all, or are very sparsely distributed. In others they are numerous beyond the normal, and in a few I found them so abundant that they touched each other. In all cases in which they were found they were well filled with sebaceous material, and their ducts opened freely upon the external surface of the skin. The most diligent search failed to reveal the presence of any in which the duct still existed but had been occluded. On the other hand, however, cystic bodies filled with fatty material could be distinctly made out. In each instance the characteristic morphology of the sebaceous gland had disappeared. A lining membrane of a more or less homogeneous character in a dense fibrous envelope could be seen. Some cellular débris could be made out clinging to the internal capsule of the cyst, the remains, no doubt, of the secretory cells which continued to furnish the material which contributed to the enlargement of the cyst.

The coil glands are well developed in some parts, and do not seem to have at all failed in their functions, if we are to judge from their dimensions. A peculiarity that is to be noted in connection with these organs is, that the coil retains its relative position in the subcutaneous, adipose, and connective tissue. The strangest circumstance in connection with the whole matter is, that the duct persists throughout, up to the surface of the skin. It penetrates throughout the entire hypertrophic mass in an apparently uninterrupted and continuous tube, lined with columnar epithelial cells. This is certainly something unusual, in view of the fact that the ducts of the sebaceous glands are not spared, and that the pressure of the hypertrophied tissue has so thoroughly and markedly flattened the apices of some of the papillæ.

The subcutaneous fat is about normal in appearance and quantity, having suffered no apparent change. In the body of the fibrous mass, however, are to be seen, at rare intervals, fat-cells, each one of which appears to be isolated from its congeners. It was the occurrence of this strange sight that first drew my attention more particularly to a closer examination of the growth. The appearance of these fat-cells is strongly suggestive of a derivation from the subcutaneous adipose tissue, yet their distance from that structure is so great that we are forced to one of two conclusions: as has been mentioned, the gradual formation of the fibrous tissue of the tumor has a certain strangulating effect upon structures laying in its vicinity. If these structures have a sufficient amount of resisting power, the slow pressure acts in the manner of a stimulus, and the result is a compensatory hypertrophy. On the other hand, if not endowed with sufficient resisting power, atrophy is produced and the result becomes evident. An example of the former is seen in the hypertrophy of the blood-vessels; of the latter, in the development of the retention cysts.

To recur to the possible explanation which may be given for the occurrence of these isolated fat-cells: we may assume that in the process of strangulation of the ducts of the sebaceous glands some of the fat-cells of the sebum still contained in those ducts may have been caught in the meshes of the fibrous tissue. This would seem to be borne out by the fact that the solitary fat-cells observed are smaller than those of the subcutaneous fat. Another appearance which would seem to lend weight to this view is the occurrence of irregular masses, which, while not well defined, are very suggestive of sebum; but they are most probably artefacts produced by the process of cutting sections, the knife possibly dragging some sebum over the section; this is rendered the more probable by the grumous appearance which each mass presents.

The only other explanation which occurs to me is, that during the progress of the hypertrophy a *columna adiposa*, such as is described by Warren,[1] should have been enmeshed in the fibres of the fibrous growth, and, in that manner, some fat-cells might have been isolated. It is true that Warren states that we only find these fat columns where hair exists, but lanugo hairs are by no means uncommon on the nose, and well-developed hairs are frequently seen on the tip of that organ in men. The connection of these columns of fat with hairs would seem to lend additional weight, on account of the sparse number of these hairs and the correspondingly small number of isolated fat-cells which is noted.

The question which would naturally arise is, why these cells do not become absorbed through the pressure exerted upon them. This is a difficult question to answer, and can only be accounted for on the supposition that some have more resisting envelopes, and, their oily contents rendering them elastic, they successfully oppose the pressure which is exerted.

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[1] J. Collins Warren, Columnæ Adiposæ, etc., Cambridge, 1881.

The pathological anatomy of rhinophyma is a subject which is far from being exhausted, and I am inclined to believe, from my limited observations, that it promises to open up a large and interesting field for further and more elaborate investigations.

A CASE OF ACROMEGALY.

BY HAROLD N. MOYER, M.D.,

Neurologist to Cook County Hospital; Adjunct Professor of Medicine, Rush Medical College, Chicago.

HISTORIES of this disease are still sufficiently rare to merit description, though nearly eighty cases have been recorded since Marie published his first paper on this subject.

M. C., male; aged twenty-four; married, two children; born in America of Irish parents. Father is living and well, aged seventy-three years; mother in good health, aged sixty-seven years. The patient has four sisters and two brothers, all of whom are living and well. The father is a short man, rather stout, with a small frame and small hands and feet. The mother is above medium height, slender, with small bones. The sisters are rather tall but of slight build, the brothers are shorter, but of small frame.

Previous health good, measles at the age of ten, and scarlatina at twelve. Habits good, though he uses liquor moderately now and then. No history of venereal infection. Sister says that he was not different in his general appearance from other members of the family until he was seventeen years of age, at which time he began to grow rapidly, and his hands increased in size until they reached the present extraordinary proportions. Four years ago the eyebrows began to enlarge and project, and his face assumed the heavy look which is now so apparent. In addition, the sister notes that there has been a decided failure in his mental capacity. There are no delusions or distinct failure of memory, but a certain letting down in the mental tone, shown by advancing incapacity for fixing his attention or pursuing any regular occupation. He has ceased for the past year to provide for his family, and he now resides with his sister, and is cared for by her.

In April, 1891, he had a severe attack of influenza. Since that time he has had more or less pain in head, at first localized in the lower right occipital region; it then began to spread, and finally extended over the right side of the head. At times the scalp would be tender to the touch. There have been frequent and profuse night-sweats. Two years ago he experienced pains in his hands and fingers, which at times were so severe that he would be awakened by them. He does not localize the pain in the joints, but rather in the bones of the hand and fingers. The pains were often accompanied by a sense of numbness and tingling.

The frontal sinuses project and the soft parts are thickened, as well as the bones; the nose is enlarged, the lower jaw is wide and the lips thickened. The circumference of the head is 24.5 inches. The hands present the characteristic spade-like or battledoor form. They are absolutely symmetrical, and present no nodular thickening or deformities; they are simply too large as compared with the arms. The hand measures nine inches in length and 4.5 inches across the palm. The skin of the hands and face is coarse in texture and thickened, but nothing is noted that would at all suggest elephantiasis.

Dr. C. D. Wescott, to whom the patient was referred for ophthalmoscopic examination, reports that the patient stated that his eyes have always been weak; and he found a high degree of hyperopia (4. D. as measured by the ophthalmoscope) in both eyes. Squint has been noted since the third year of life, and there is only quantitative perception of light in the squinting eye (the right). In the left there is also considerable amblyopia, vision being only $\frac{20}{100}$ with correcting glasses. The ophthalmoscope reveals a normal fundus and clear media in the left eye, but the right disk is much paler than the left, and there is probably some optic nerve atrophy.

A MECHANICAL DEVICE FOR ILLUSTRATING THE MOVEMENTS OF THE LUNG IN PENETRATING WOUNDS OF THE CHEST.[1]

BY ANDREW H. SMITH, M.D.,

New York City.

THE apparatus consists of two bellows, operated by a handle common to both, representing the thoracic cavities, and each containing an elastic bag representing the lung. The top of each bellows is of glass. A slot on each side, covered by a slide, represents a wound of dimensions variable at pleasure. Tubes representing the bronchi and trachea connect the two bags. With the slot of one side wide open and the bag on that side disconnected from its fellow, it is seen that the movements of the bellows are without effect upon the bag. But when the connection is re-established, it is evident that the bag receives air from its fellow when the handle is depressed, and that it collapses when the handle is lifted, its movements being exactly the reverse of those of the bag on the other side. When the device representing the glottis is partly closed, this reverse movement is very marked.

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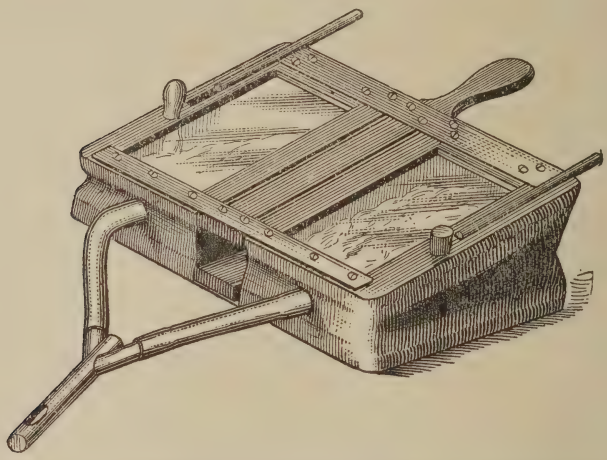
[1] The apparatus was shown at the American Climatological Association, Philadelphia, May 26, 1893.

It will be observed that this action exactly resembles that seen in an animal when the thorax on one side is freely opened.

On progressively lessening the size of the opening, this reverse action becomes constantly less until a point is reached at which the lung (bag) remains at rest in a state of partial inflation. With a still smaller opening the lung begins to follow the movements of the chest and becomes more and more independent of the action of its fellow.

The accompanying cut will perhaps best illustrate the form of apparatus employed (Fig. 1).

Fig. 1.



Dr. A. H. Smith's device for illustrating the movements of the lung in penetrating wounds of the chest.

This transference of air from the lung on the sound side to its disabled fellow may be turned to account in expanding the compressed lung when a permanent opening has been made into the cavity of the chest in a case of empyema. It is necessary only that the patient, after a full inspiration, compress the nostrils and make an expiratory effort. He can graduate the distending force exerted upon the compressed lung by his sensation of pain, ceasing the effort when the discomfort becomes considerable. Frequent repetitions of this from day to day will greatly hasten expansions, especially when there are adhesions present.

I would also suggest the use of a valvular drainage-tube for cases of operation for empyema. The valve may consist simply of an india-rubber nipple with a slit in the top. This nipple is secured to the outer extremity of the ordinary tube, and forms a complete valve.

CONSERVATIVE TREATMENT OF PYOSALPINX.[1]

BY CORNELIUS KOLLOCK, M.D.,
Cheraw, South Carolina.

In cases of pyosalpinx, much caution and a careful and rigid examination are called for to determine the cause of the presence of pus, the length of time it has been there, and the condition of the walls of the tube in which it is found. Attention should also be given to the peritoneum and ovaries; but, above all, there should be the strictest inspection of the endometrium, a disordered condition of which contributes much to the production and continuance of pus in the tubes.

It is often with much difficulty that we separate genuine cases of pyosalpinx from the heterogeneous statistics of writers who have resorted to cœliotomy and castration for many of the simpler forms of inflammatory trouble of the uterus and its appendages.

Now that gynæcology and abdominal surgery have made such advances, we are able to diagnosticate pelvic troubles more accurately, and to draw lines between the various degrees of inflammatory action of the tubes and ovaries. Operations for the milder forms of salpingitis are more rare, and cœliotomies more frequent.

It is not surprising that the statistics of a former period, presenting such a number of normal ovariotomies, should mislead many, more especially those inexperienced in pelvic surgery, and cause them to perform operations that might be dispensed with. The firm adhesions we may have to contend with, the risk of lacerating an intestine, or rupturing a pus-sac into the cavity, should lead us to think very seriously whether an operation may not be avoided.

The doctrine was held and promulgated, not more than three years ago, by men of distinction and skill, that a tube containing pus should always be removed, along with its accompanying ovary. Some writers have gone even further, by insisting on the removal of the tubes and ovaries on both sides, when those on one side only are affected, in order to prevent a propagation of the disease. Lawson Tait and Battey have held this opinion. Dr. Battey's published report of "Antisepsis in Ovariotomy and Battey's Operations" gives three hundred cases, two hundred and fifteen of which were cases of Battey's operation. The ratio in the cases of Lawson Tait would probably be about the same, perhaps higher.

Within a year or two changes have been made in the treatment of pyo-

[1] Read before the Southern Surgical and Gynæcological Association, November, 1893.

salpinx, and conservatism now enters largely into its management. Men of high position in the profession are more decidedly agreed that a moral obligation rests upon us to relieve our patients without the sacrifice of any organ, or part of one, when this is compatible with safety. Recently Polk, Pryor, Krug, Boldt, and Dudley have reported to the New York Obstetric Society a number of cases of pyosalpinx treated by the conservative method now in vogue. This treatment, when faithfully carried out by curettage and aseptic divulsion, has not only been successful in saving the tube and ovary on the non-affected side, but in several instances the diseased tube was entirely relieved of the presence of pus. In some cases Dr. Polk found the tube so affected as to make its removal necessary; but he left the ovary, it being in a healthy condition. There can be no objection to this, for, though an ovary thus isolated can be of no practical value, it is well that it should remain and exercise its wonted influence on the woman's life.

Bland Sutton contends that there is no reliable evidence that the cystic tube ever discharges through the uterus. He is good authority on all matters pertaining to gynæcology, and we must pause and reflect before we gainsay his assertions; but facts are presented by men of experience and observation,—men whose integrity and competence cannot be questioned. What then? Must we still hold to old theories, because they are taught by men of high repute, when facts are laid before us that cannot be set aside?

That many cases of pyosalpinx have been accurately diagnosticated and radically cured without the mutilation of any part of the sexual organs is well authenticated. In addition to the writers mentioned above, Dr. R. A. Murray has had wonderful success in the treatment of this painful disease.

My experience, while limited compared to that of others mentioned, has been sufficient to convince me that the conservative system of practice is bringing us to that period when the mutilations of women, once supposed to be necessary, should cease. This, we think, will be accomplished, as we also believe that abdominal surgery, in the hands of such men as Sänger, Porro, Kelly, Price, and others, will put an end to the barbarous and murderous practice of resorting to craniotomy and embryotomy on the living fœtus.

If the association will bear with me a short time, I will present a few cases of pyosalpinx which have fallen into my hands recently, the happy termination of which has placed me under obligations to the pioneers in the conservative treatment. All but one of the four cases now reported were relieved entirely without resorting to cœliotomy.

Case I.—Mrs. R. L. B., aged twenty-four years; married six months; menstruation normal; had enjoyed excellent health until three months after marriage, when menstruation became very painful; hot, burning sensation in vagina and vulva; uterus enlarged, but not displaced; hard exudations on the broad ligament, and profuse leucorrhœal discharge. There was too much tenderness of the abdomen to allow a bimanual examination. The vagina was thoroughly douched with hot carbolized water for several days,

and a counter-irritation of the lower abdominal wall by blisters soon lowered the temperature from 103° to 100° F. A thorough bimanual examination was then made, and a collection of pus was found in each tube; one high up near the point of entrance into the uterine cavity, the other lower down towards Douglas's pouch. It being found impossible to manage these collections and to lessen the hard exudate, an exploratory incision was made. The pus-sac on the left side was easily relieved by a gentle pressure upwards, which caused the pus to discharge into the cavity and out through the vagina. The pus on the right side I could not remove, as the lumen of the tube was closed, and the wall, through its whole length, seemed to be in a morbid state, almost macerated. The tube was, therefore, taken out; but, to my amazement, I found the ovary in a perfectly healthy condition. I followed Dr. Polk's example, and left it untouched. After the cervical canal had been thoroughly dilated, the uterine cavity was curetted and thoroughly cleansed twice a day for several days with hot carbolized water and a solution of bichloride of mercury, one to one thousand. The hard exudates were gently massaged towards the uterus, and they finally disappeared. The patient made a complete recovery, and, when I last heard from her, had passed the seventh month of gestation. I am entirely satisfied that the profuse leucorrhœal discharge, with which this woman was troubled when I first saw her, was pus that was emptied from the Fallopian tube into the uterine cavity and discharged through the vagina.

Case II.—A mulatto, aged twenty, had been married eight months, miscarried six months after marriage at about the fourth month of gestation. She had a profuse, purulent leucorrhœal discharge; uterus was enlarged, very tender to the touch. There was a hard exudate on each side, and a well-formed pus-sac in one tube about half-way between the entrance of the tube into the uterus and the fimbriated extremity. Patient was placed under chloroform, a bimanual examination was made, and the cervical canal thoroughly dilated. The cavity was cleansed twice a day, first with hot carbolized water, then with a hot solution of corrosive sublimate of one to two thousand, and tampons soaked in boracic acid were applied. This treatment was kept up for a couple of weeks; a gentle pressure was made every day upon the exudate, and there was a flow of pus every day from the cervical canal, which I was compelled to believe was emptied into the uterine cavity. The tumor in the tube grew smaller, the exudate softer, and the temperature was reduced from 103° to a normal point. This woman made a complete recovery; she menstruated regularly and painlessly.

Case III.—Mrs. L. C. F., aged twenty-five, married seven months; menstruation was always painful; and she had an abortion about three and a half months after marriage, resulting in puerperal peritonitis. I saw this case in consultation in February, 1891. A bimanual examination revealed a largely subinvoluted uterus, very tender to the touch, with exudates on each side of it. There was a very profuse leucorrhœal discharge.

I dilated the cervix thoroughly and curetted the uterus under complete antisepsis. This was followed by hot carbolized douches, and vaginal tampons soaked in boracic acid and glycerin. The tubes emptied themselves into the uterus and through the cervical canal. Her physician informed me, a short time after the consultation, that there was nothing for him to do but to keep the womb open and allow the tubes to drain themselves. This woman also recovered completely, and was delivered of a fine healthy child in December, 1892. Since the attack of pyosalpinx she has had no trouble in menstruation, nor in the discharge of any sexual function.

Case IV. *Pyosalpinx, Endometritis, and Puerperal Peritonitis.*—Mrs. J., aged twenty-nine, very slender, delicate looking, and by no means robust, is the mother of four children. I saw her in consultation six months after the last labor. She had an attack of puerperal peritonitis; temperature 103¾° F.; pulse 129; respirations 30. Abdomen was much distended, pulse feeble and irregular; fetid discharge from the vagina; uterus large and patulous; hard exudates on both sides of the pelvis, fixing uterus. An antiseptic douche, solution of bichloride of mercury one to one thousand, was applied; my finger was introduced into the uterus, and placental débris, almost gangrenous, was removed. The patient was much exhausted, and it was necessary to administer, by enema, small quantities of brandy and beef extract every three hours. Digitalis and strychnine were also given hypodermatically. Much to my surprise she began to improve. The fever passed off; the uterus became less tender and greatly reduced in size. There was some discharge, and as the uterus was thoroughly cleansed, I was sure it must come from a tube. A hot vaginal douche was always followed by a great diminution of tenderness. As the fetid odor had disappeared from the discharge, and the tenderness was much relieved, the vaginal douches were kept up, and the exudates gently massaged towards the uterus twice daily until the discharge entirely ceased.

These cases, together with others reported, prove to my satisfaction that pyosalpinx may be cured without removing the tubes and ovaries.

WHEN TO OPERATE FOR SQUINT.

BY EDWARD JACKSON, A.M., M.D.,

Professor of Diseases of the Eye in the Philadelphia Polyclinic; Surgeon to Wills Eye Hospital.

It still happens, though perhaps not so frequently as in former years, that the ophthalmic surgeon encounters cases of divergent squint giving the history of a prior convergent squint, for which an operation was done that seemed at first to yield a satisfactory result, but after a time the eye commenced to deviate in the opposite direction. There also occur cases

giving the history of squint partially or completely relieved by operation, but relapsing subsequently. A few years after the introduction of tenotomy for strabismus, cases of this kind became so common that the operation fell into general disrepute. They are still common enough to seriously impair the reputation of the squint operation as a method of surgical treatment.

The operation is not difficult to perform in some sort of fashion; it is not very painful; it offers no danger to life, and its immediate results are striking. Probably it will always be liable to be done for insufficient reasons, if there be lack of knowledge or conscience on the part of the operator. There are but few cases in which the failure to attain a good result, or a permanent good result, is more obvious, or more constantly before the attention of the patient and those with whom he comes in contact, so that ultimately the surgeon's reputation must seriously suffer from every ill-judged operation. Many points with reference to the pathology and proper treatment of strabismus are still obscure, but enough is known to enable us, with considerable certainty, to avoid any risk of making the patient worse for the operation.

In the first place, *no operation should be done so long as other methods of treatment offer any probable chance of relief.* In considering the matter from this point of view, the first fact that demands attention is that in some cases squint disappears spontaneously. It is not at all rare to encounter patients with perhaps an amblyopic eye where the examination raises no suspicion of strabismus, but which, upon close questioning, give a history of that condition in childhood. In a certain number of these cases probably such history is of doubtful value. The movements of the eye in infancy are quite imperfectly coördinated, and the period at which complete coördination is attained varies. But the very existence of such cases of slow development of coördinating power casts a doubt on the propriety of operation in early childhood. In any case, the power of using the two eyes together is acknowledged to develop after birth, and in the large number of cases of congenital squint, or of squint first noticed in childhood, there is simply an arrest of this development, or a deficiency of development which may not amount to complete arrest. There is no way of certainly judging in early childhood, when the possibilities of change by future development are still very great, as to what cases of squint will be permanent and what will recover, or as to how much of the squint will be permanent in those cases in which it does not entirely disappear. The doctrine that the amblyopia of squinting eyes develops as a consequence of their disuse furnished a plausible reason for early operation in cases of squint, but the view that in most cases the amblyopia is the primary fault and the squint a consequence brought about by lack of binocular vision to guide the normal development of the muscles to complete balance and perfect coördination, excludes any such reason for early operation. My next rule, then, is *not to operate for squint before the age of five or six years,* and at that age rarely to attempt its complete correction by operation.

Of course the prohibition as to operation does not apply to other

methods of the treatment of squint. In fact, the reasons for avoiding operation are often reasons for their early and persistent application. At the age mentioned, however, it will be proper, with careful explanation to the parents of the effect aimed at and the possible future needs of the case, to do squint operations for the correcting of a deformity, when this is of very high degree and permanent.

The possibilities of considerable development of the ocular muscles belong to childhood, and probably have quite passed by at the age of puberty. So that at this time, in a case that has been properly studied and carefully subjected to those measures which should be tried prior to operation, it is proper to attempt the complete correction of the squint by operation where it has been incompletely corrected before or where it was originally of comparatively low degree. Of course at this time, and subsequently, must be borne in mind the other precautions to be observed in the resort to operative treatment. In adult life, it is only needful to make sure that the case shows the present indications for an operation, with a history of continuance from childhood or for a considerable time, in order to place it in the category of fit cases for operation.

In any case of squint, the first question that the surgeon should ask, after determining that the condition is one of real squint and not merely an apparent deviation due to an unusual relation of the visual axis with the centre of the cornea, is this: *Is the squint concomitant or paralytic?* Have the eyes a faulty coördination of all their movements, though moving with considerable freedom in all directions; or does the squint arise from the distinct limitation of movement in certain directions due to paralysis or paresis of one or more particular muscles?

In general, cases of concomitant squint are proper cases for operation; cases of paralytic squint are not. There are numerous cases which partake somewhat of both characters: as, cases originally paralytic that have recovered considerable power in the weakened muscles, but with a secondary contraction of the opposing muscle continue to maintain the squint; or cases in which the high degree of concomitant deviation has left the long-stretched muscle comparatively feeble and unable to balance its opponent. Such cases must be separately studied, to assign to the various factors their proper share in the causation of the deformity, and to balance the probable advantages and disadvantages of an incomplete cure, with the inconveniences and risks of operation.

It is a great mistake to suppose that an operation will be useless in cases in which there is or has been a leading element of paralysis. An eye may have very great limitation of movement, and, if it can be brought into such position that the field of its limited movement will be in the direction that the patient commonly desires to look, the result of operation may be perfectly satisfactory. Some of the most brilliant results that I have known have been in cases that had been repeatedly told by ophthalmic surgeons that they were unsuited to operation, but who were driven

by the annoying diplopia, which accompanies paralytic squint, to persist in the effort for relief until they found some one who, by operation, removed the diplopia from the centre of the field of vision to some peripheral portion, where it ceased to be annoying. It is well in the treatment of cases of ocular palsy to bear this in mind and not to tell the patient that his case is entirely outside of the class that are benefited by operation, but that, while an operation will be useless at the present time, it may be essential to complete the cure after the paralyzed muscle has regained some power.

The rule to operate on no case of squint that can be relieved in other ways excludes from the class fit for operation most of those cases in which the squint is due to some form of ametropia; and, indeed, those cases which result from errors of refraction furnish many of the instances of persistence or of recurrence after operation. As Donders pointed out, and insisted on most strongly, hyperopia is capable of causing convergent squint through the increased effort at accommodation that it entails; and, as Graefe demonstrated, there is, in a very large proportion of cases, a close radical connection between high myopia and divergent squint. In any such case operative treatment without the correction of the ametropia will fail to cure the squint. It is, therefore, often essential before proceeding to an operation to ascertain if the squint is due, or may be in part due, to ametropia, and to correct the ametropia and keep the case under observation for a considerable period (months or, in children, years), until it is clear that this defect has ceased to diminish, before proceeding with the operation.

The determination as to whether ametropia is the cause, or one of the causes, of squint in a particular case is often quite difficult, since ametropia of some sort is present in practically all eyes. If squint arises from other causes, it will be merely coincident to the squint. As a mere coincidence, therefore, nine out of ten cases of convergent strabismus should occur in connection with hyperopia; and it is probable that in the large proportion of these cases no causal relation exists. If we could be sure that the ametropia had nothing to do with causing the squint, its correction might be neglected. Probably, in a large proportion of cases of low degrees of hyperopia and myopia, the squint is entirely independent of the error of refraction; but there are a few cases of even quite low degrees of ametropia where this is not the case, and there is no way of knowing which these cases are except by a sufficient trial of correcting lenses. Therefore in any case of squint, with ametropia of 1. D. and upward, correcting lenses should be tried and worn for a considerable length of time before an operation is attempted.

If the patient is an adult or approaching adult life, it is not always necessary to defer the operative treatment on account of the presence of ametropia. If the squint is of sufficiently high degree to require more than a single tenotomy for its correction, the partial correction may be done about the time that the glasses are put on, and the completion of the operative treatment deferred until the lenses have had opportunity to produce

their full effect. Under these circumstances, the lenses will be rather more likely to produce a notable improvement after an operation than if they had been worn without any alteration of the previously-existing relations of the eye-muscles.

When the ametropia is of a high degree and the squint intermittent or quite variable, being sometimes but slight and at other times very marked, the probability of its dependence on the ametropia is very great. Such cases, even though some part of the squint remains constant, should never be operated on until after weeks or months of wearing the correcting-glasses; and, in general, an intermittent squint is not a proper case for operative treatment. In determining the constancy or intermission, we cannot rely entirely on the observations of parents and friends; but, where the first visit shows a marked variability in the extent of the deviation, the attention of the parents should be called to this, and the patient should be seen repeatedly by the surgeon before any operative treatment is decided upon.

Of the reasons for operating for squint, probably the improvement of vision in the squinting eye is not the least important. In eyes that have never been used for accurate seeing, whether on account of squint or anisometropia or high astigmatism, the bringing of the eye into considerable use for purposes of distinct vision will, in the course of a few months, produce a notable improvement of vision, provided the visual apparatus is otherwise perfect. But the cases of this kind of incompleteness, or arrested development of the visual function, that are relieved by squint operation are comparatively few.

Often a more important advantage is the ability, conferred by straightening the eyes, of so using the two together as to obtain true binocular vision. This, of course, is not obtainable in all cases. It presupposes at least fairly perfect vision in each eye. And this in a large proportion of cases of squint does not exist and cannot be secured. Even a somewhat deficient binocular vision is, however, of great good to the patient; and wherever such vision is obtainable by a squint operation, and not otherwise, the strongest reason exists for resorting to it. Generally we may regard binocular vision as attainable whenever it is possible by the using of prisms to produce binocular diplopia. And often it is possible to produce this after repeated trials, even though at first the patient fails to perceive the false image and its relation to the true image.

In a few cases it would seem that some departure from the physiological connection that usually exists between the two eyes causes the bringing of the image on the maculæ of both eyes to produce not binocular fusion, but the most annoying diplopia; and this, even where vision is most distinct in the region of the macula. It is possible by careful study to recognize such cases prior to operation; after operation it is impossible to ignore their peculiarity; and where prior recognition is accomplished, operation should be refused, or the probability of annoying diplopia arising from it fully explained to the patient.

A reason for a squint operation that is felt in almost all cases, and probably in the aggregate is the reason of greatest importance, is the need of correction of the visible deformity. And this reason is quite sufficient, in any case, alone to justify the performance of the gravest or of repeated operations for the relief of squint. It is a reason that often needs to be urged upon parents, whose familiarity with the appearance may make them less able to appreciate the unfavorable influence that squint exerts on the happiness of the child in its relation with others. The risk of operation is extremely slight, and where only the cosmetic reason exists for the operation, one of the eyes will necessarily be a useless eye, with which it would be right to take very much greater risks for the good to be accomplished.

Heterophoria, or *latent* or *dynamic squint,* of course, does not present this cosmetic reason, but its absence may be balanced by the existence of eye-strain, due to the effort to prevent the squint from becoming manifest. Most of what has been said, as to the indications for operation, will apply when the squint is latent. In this case, however, it is essential to study the tendencies of the eye-muscles over a considerable period of time, in order to determine that the tendency to squint is a constant and not a temporary or intermittent phenomenon. The need for the prior correction of ametropia is the greater, because it may primarily cause the symptoms of eye-strain complained of, besides causing the tendency towards deviation of the visual axes.

CONTRIBUTION TO THE TREATMENT OF PULMONARY TUBERCULOSIS WITH PROFESSOR KOCH'S TUBERCULIN.[1]

BY KARL VON RUCK, M.D.,
Asheville, North Carolina.

Reports of cases showing the results of any particular procedure in therapeutics, made immediately or within a short time after their application, are current in medical literature, and, while they may throw light upon the utility or otherwise of the treatment employed, it is not to be doubted that many such reports would require modification, indeed, might show the reverse of the conclusions first arrived at, if a longer time had intervened by which the permanency of the results or the final issue of the cases could have been established. We are the more ready with our reports if our work has been apparently successful, or if the medical or surgical procedure is new and is attracting attention at the time. But if hasty reports and conclusions

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[1] Supplementary report showing the present condition of twenty-five cases treated two years ago. Read before the American Climatological Association, May, 1893.

were ever offered, it certainly was the case with the effects of Professor Koch's tuberculin; indeed, in many instances, a few weeks of experimental employment of the remedy was deemed sufficient for enthusiastic recommendations or for absolute condemnation.

It is now two years since I wrote my report of my first twenty-five cases treated with Koch's tuberculin, which report was presented to the American Medical Association at Washington on May 7, 1891, and subsequently published in the *Therapeutic Gazette* for June 15 of the same year. In making the report it was my earnest endeavor to be conservative, and I purposely published with it the detailed history and all important data in connection with the treatment of each case, so that the reader might be able to judge for himself the benefit each patient had derived. The cases were divided into three classes.

CLASS A.—*Five cases* who had one or both upper lobes involved, but without destructive changes, the general health of the patient being still comparatively good.

CLASS B.—*Seven cases* with more extensive disease or moderate destructive processes, but still in a fair physical condition.

CLASS C.—*Thirteen cases* still further advanced in local disease, with considerable constitutional impairment, but still in a condition justifying some hope for improvement.

I concluded that report with the following remarks: "First, that according to my experience, with the patient under constant medical supervision, and under the precautions used, the remedy *can* be given with the avoidance of all unpleasant symptoms or danger; second, that, while I believe that I have derived material benefit, the experience of many additional observers under *a similar mode of management and administration to that adopted by myself* is required to establish the exact value and range of applicability of the remedy; and, third, that the combined means by which my results were obtained appear to deserve the favorable consideration of the profession."

It is now my purpose to show the outcome of those twenty-five cases two years later, as a supplement to my first report, with such explanatory remarks as may be essential for each individual case. To this end careful inquiry has recently been made as to the present condition of these patients.

CASE I., *Class C*, was reported as slightly improved when the treatment was discontinued, on March 11, 1891.

This patient showed further improvement after the discontinuance of the remedy, and remained in the institution for nearly fifteen months thereafter. Under a course of Liebreich's cantharidine the larynx made remarkable improvement, the ulceration of the epiglottis healed, and the infiltration disappeared almost entirely, and sufficiently so to result in the complete restoration of the voice, which had been lost for over two years. Her nutrition also improved. In March, 1892, active changes again recurred in

the lungs, which were accompanied by the usual symptoms of fever, increased cough and expectoration, and loss of flesh. The larynx remained unaffected. All these symptoms subsided under a second course of tuberculin,—thirteen injections from one-tenth to one milligramme,—and the patient left the institution in May, 1892, greatly improved. At this writing a relapse of her lung affection of recent date has come to my knowledge.

Case II., *Class B*, was reported as apparently cured. This patient has remained well to this date, and is entirely free from all symptoms. In April, 1892, he had an attack of la grippe, with an intense bronchitis of one week's duration, from which he made a prompt and perfect recovery.

An affection of the respiratory organs like la grippe may be looked upon as a rather crucial test of the permanency of recovery, and the frequency with which we note active symptoms to supervene in latent tuberculosis in connection with la grippe is well known to every practitioner.

The sputum during the existence of the acute bronchitis in connection with la grippe contained no bacilli.

Case III., *Class A*, reported as improved, has made an entire recovery, and has since remained free from all symptoms.

Case IV., *Class C*, was reported as improved and the laryngeal disease cured. This patient was still further improved, returned home, relapsed as to her lung affection, and died in July, 1892. The result as to the larynx was permanent until death.

Case V., *Class C*, reported as not improved, died in 1891.

Case VI., *Class C*, reported as not improved, died in 1891.

Case VII., *Class A*, reported as cured, has continued free from all symptoms, and is entirely well at the present time.

Case VIII., *Class B*, reported as apparently recovered, returned home in May and relapsed in the fall of 1891. He was treated again with tuberculin in the winter of 1891–92, and was again materially improved, but not to the same degree as in the first course of treatment. He is free from fever, but coughs and expectorates. His general health is fair. He is still greatly improved as compared with his condition before his first treatment.

Case IX., *Class A*, was reported as apparently cured. He has remained entirely free from all symptoms to the present time, and is enjoying perfect health.

Case X., *Class B*, reported as greatly improved, returned home in May, 1891. His improvement has not only continued to the present time, but I have recently been informed of his entire recovery without further treatment.

Case XI., *Class B*, reported as apparently recovered, has been free from all symptoms to the present time, and is entirely well.

Case XII., *Class C*, reported as improved, relapsed, and died in 1891.

Case XIII., *Class C*, reported as improved, relapsed in 1892, and died since.

CASE XIV., *Class C*, reported as greatly improved. No recent report obtainable. He continued in his improvement to the date when last heard from.

CASE XV., *Class C*, reported as greatly improved, died 1891.

CASE XVI., *Class A*, reported as apparently recovered, has remained entirely free from all symptoms, and is perfectly well at the present time.

CASE XVII., *Class C*, reported as improved, continued so when last heard from, in November, 1892. No response to my recent inquiry.

CASE XVIII., *Class C*, reported as greatly improved, continued so when last heard from. No recent report obtainable.

CASE XIX., *Class C*, reported as improved, relapsed, and died in 1891.

CASE XX., *Class B*, reported greatly improved. According to recent information has entirely recovered without resorting to further treatment.

CASE XXI., *Class C*, reported as improved, is about the same at the present time.

CASE XXII., *Class B*, reported as improved, has entirely recovered.

CASE XXIII., *Class B*, reported as apparently recovered, has continued in good health, free from all symptoms, to the present time.

CASE XXIV., *Class A*, reported as greatly improved, has entirely recovered, and is free from all symptoms.

CASE XXV., *Class C*, reported as improved, obtained still further improvement. He subsequently relapsed, but improved again, and is now free from all active symptoms.

We find, therefore, that I reported in 1891, in the early stage, five cases treated, three of which were believed to have apparently recovered, one to have been greatly improved, and one to have been improved; all of which have made an ultimate recovery, no relapse having occurred in two years.

In the more advanced stage, Class B, I reported seven cases treated, four of which were thought to have apparently recovered, two to be greatly improved, and one improved. Of these seven cases we find six to have made a final recovery and to be well two years later, while one relapsed and is again improved.

This gives us for the early stage one hundred per cent. recoveries, and for the middle stage eighty-six per cent. of recoveries and fourteen per cent. of improvements, without a death in two years.

In the far-advanced stage of Class C I reported thirteen cases treated, four of which were greatly, six moderately, and one slightly improved; two had made no improvement. Of these cases are still alive six, three of which have continued greatly improved and three others improved, while seven have died.

As to the share attributable to the treatment with tuberculin in obtaining these results, I am still, and always shall be, unable to mathematically demonstrate it. Every thoughtful reader who is free from prejudice must, however, admit that these results are such as have never been obtained by any mode or combination of treatment heretofore known.

In a paper upon the "Prognosis in Pulmonary Tuberculosis," published in the *Medical News*, September 13, 1890, I reported eighty-one early-stage cases corresponding to Class A, of which a subsequent inquiry similar to the present one showed twenty-four per cent. of recoveries and twenty-one per cent. of improvements. In the more advanced second and third stages four hundred and thirty-four cases were treated, nine per cent. had recovered, while eleven per cent. were still improved. While a similarly large number of my cases treated with tuberculin might have shown the present results modified, yet it cannot be conceived that such a difference as this would be possible.

That it does not exist is, however, amply proved by my subsequent experience with an increased number of cases treated with tuberculin with equally good results, and which I shall report in a future paper.

It has been urged that the results obtained by me with tuberculin are not attributable to the remedy, but to the favorable climate and the correct management of the patients in a special institution where this work was done. If this were so, why have I never before been able to accomplish results even half as good under the same conditions? Why have other patients failed to improve and recover who, either on account of individual prejudice or that of their home physicians, have not received this remedy, and who were treated with every possible care during the same time, in the same institution, and with the same advantages?

Why, then, it will be asked, is it that others have failed to accomplish such results, or, on the contrary, have testified to the injurious effects of the remedy with many of their patients? I anticipate this question because I have been asked it before by medical friends who have visited my sanitarium and satisfied themselves of my results.

In answering it, I must first of all call attention to the fact that, with a few exceptions, the administration of tuberculin, both in Europe and in this country, has been upon the original mode first proposed by Dr. Koch.

For those who do not remember it, I may add that the beginning dose recommended by him was one milligramme or more, and that the remedy was rapidly pushed in increasing doses to one hundred or even more milligrammes.

This maximum dose was attempted to be reached in a month or six weeks, but the patients were so completely debilitated by fever and constitutional reaction that the more prudent experimenter pursued a somewhat slower course, and the blind followers were overtaken by dismay and disaster in the acute processes induced with the remedy given in such excessive doses.

In this connection we should also remember that Dr. Koch's first experiments were upon early-stage cases, which were physically able to bear even a severe fever reaction, and who happened to suffer no material harm, and that the cases treated were but few when the remedy was given to the profession.

Under his plan of administration the results in early-stage cases were gratifying as compared with other modes of treatment, and, in a truly early stage, all other experimenters have seen equally good results with his own. Only in such early-stage cases did he recommend the use of the remedy, and had it been confined to such, its utility would never have been questioned. The disasters occurred chiefly in the more advanced stages, and, under the great expectations current at that time, patients both in Germany and in this country, manifestly within a few weeks of their death, received tuberculin injections, and in quantities which by their local and constitutional effects several times caused immediate death.

In the earlier stages, too, it was found that unfavorable effects were occasionally induced from the large doses given, but these bad effects were the more uniform as the treatment was applied to patients whose general health and strength had been more and more impaired during the course and advance of the disease.

Such application of the remedy had never been contemplated by Professor Koch, and all for which I blame him is, that he permitted it in the hospitals of Berlin and became aware of it through the literature of the profession elsewhere without entering his protest.

Remembering, however, that he is not a practising physician, that all treatment of cases was carried out by his colleagues, and that he himself possesses no recent clinical experiences in the treatment of consumption or any other disease, it must at this time seem strange that no one for some time dared to depart from the original dosage based upon half a dozen cases, only two of which were then said to have apparently recovered.

With the greatest admiration for Dr. Koch and his labors, this appeared to me ludicrous nevertheless, and when I mentioned my convictions to one of the hospital chiefs in Berlin, he reproved me as though I had committed the "unpardonable sin." "Would you instruct the master?" said he, in utter astonishment.

All those who after their first disappointment did not throw the remedy overboard have since, at least in part, adopted my method of administration, and I believe that I have been the first on either side of the water to enter a protest against its use as originally employed. Since that time excellent results have been obtained from minute and slowly increasing doses by others, some of which I cited in a paper published in the *Southern Medical Record* for September, 1891, and my own results have continued as favorable as ever under this method adopted by me within the first few weeks of its use.

The most recent report of Dr. Thorner, presented to the *Verein für Innere Medizin* on March 8 of this year, on his two years' use of Professor Koch's tuberculin, and which is highly favorable to the remedy, shows that he begins with one-twentieth of a milligramme and increases about as I do. Under such doses he never saw any unfavorable effect. He emphasizes that the secret in its successful employment is the proper application of the remedy.

But the proper selection of cases is also important, and no patient is suitable for treatment with tuberculin who, at the time, presents symptoms of acute inflammatory changes in tubercular areas or evidence of septic infection.

For such other modes of treatment must be resorted to, by which these symptoms are first controlled; but with these exceptions patients in any stage where the disease is still confined to the lungs and throat are eligible to the treatment.

The treatment should be carried out in a special institution or hospital, where alone sufficient control and oversight are possible. It certainly must not be delegated to junior assistants, or to physicians who do not possess large experience in the treatment and management of cases of pulmonary and laryngeal tuberculosis. Close observation is indispensable.

A week's observation of local and general symptoms, fully recorded at frequent intervals, must precede the use of the remedy to assure the absence of contraindications.

A physical examination of the chest must precede and follow each dose given, the results of which, to the minutest changes observed, should be carefully recorded upon a diagram for comparison.

The difference between a local and general reaction must be clearly understood. The former consists in an increase of the local auscultatory phenomena, with or without slight increase in cough, or a sensation of fulness in the tubercular area of the lung. In the larynx we can observe increased vascularity, sometimes slight swelling, and always increase of the secretions; frequently a sense of fulness in the throat is spoken of by patients.

Any effect beyond this is undesirable, and can be avoided if enough interest is taken in watching the case.

A general reaction, on the other hand, shows, in addition to the local effect, rise of temperature, increase in pulse-rate, shortness of breath, sometimes nausea, vomiting, and diarrhœa. Those symptoms if well marked are signs of positive danger, and repetition of the dose which produced them, or an increase of the dose, is almost sure to be followed by relapse.

No dose should be repeated until the effect from the previous dose has subsided, and then not until after twenty-four hours.

If the local reaction has been well marked or prolonged a return to the dose which had previously been inoperative is required, and the increase must thereafter be the same as it would have been had a larger dose never been given. The same would, of course, be the more true if general symptoms have been produced.

The reaction occurs, as a rule, in from six to eight hours; I have, however, seen it as early as three hours and as late as thirty-one hours after a given dose; this must be borne in mind, and frequent examinations, especially in the beginning of the treatment, are necessary, so that the effect may be recognized. The duration of the reaction is, as a rule, about six hours, if

only local; if general, it may last twelve to twenty-four hours and longer. I have found that the same patient reacts, as a rule, within about the same limit of time.

A certain dose having been given without reaction following, this same dose is nevertheless to be repeated once before an increase is permissible. If a too severe local or general reaction is observed, the patient must be put to bed, and kept perfectly at rest until the reaction has entirely subsided.

Beginning with one-twentieth of a milligramme as a trial dose, to which I have never seen a response, the next dose is one-tenth of a milligramme, and the increase is thereafter one-tenth until one whole milligramme is reached; then I increase one-fifth of a milligramme until two milligrammes are reached; next one-half milligramme up to ten; from ten to twenty milligrammes I increase two and one-half milligrammes, and thereafter five milligrammes at a time.

Periods will be observed when for weeks together no local or general reaction is noted, while the subjective and objective improvement of the patient progresses favorably; and whenever a point has been reached where this improvement is radical, this is the time to stop the use of the remedy, regardless of the dose reached, allowing an intermission of from two weeks to a month.

If no relapse has occurred in this time, if everything is highly satisfactory, and the recovery is apparent, we keep the patient under observation as long as possible, otherwise a repetition of the treatment is, of course, necessary.

In the second course we begin with one-tenth of a milligramme, but increase after each dose so long as no local reaction is produced. My results have been obtained upon this plan; and while other plans may also be safe and accomplish good results, and while some one may devise even a better plan, until better results than mine are shown by others no change from this mode of administration should be made.

I have thus treated over one hundred patients with between six and seven thousand injections, and, with the exception of my first week or two of experimental use, I have never produced any effect which has in any way been undesirable, nor has there been one single case in which the treatment caused discomfort. I have not found any advantage from Hunter's modification, and am of the opinion that it is in no wise safe to increase it faster than the original tuberculin.

He who cannot have his patients under close and constant observation, or who gives the remedy with less care, simply takes chances, and if no disaster follows, it is good luck, nothing more.

If my precautions and methods in the use of tuberculin are then really essential for good results, as I have found them to be, and which riper experience of two years or more of other observers seems to confirm, we must not blame the remedy if it failed to come up to our expectations under its

erroneous use in unsuitable cases and in excessive and highly dangerous doses; we should the less criticise it when the results were unsatisfactory in the hands of men with little experience in close physical diagnosis, and in the management of the disease, some of whom dealt out their doses at their office hours without again seeing their patient until he came for his next dose, or until the physician was summoned to find how ill an overdose had made his patient.

In my previous writings on tuberculin I have been exceedingly careful not to commit myself too far; I am now ready to stand by the remedy, not in recommending it as a cure-all, or under all conditions of the disease, but certainly as a remedy of the greatest value when used and restricted as indicated in this paper. With me tuberculin is no longer on trial as an experiment. On the contrary, I find its effects as reliable and as uniform as I could expect them to be under the great variety of individual conditions, such as constitution, stage of the disease, organs involved, or complications present.

PERSONAL EXPERIENCE IN THE OPERATIVE TREATMENT OF STONE IN THE BLADDER.[1]

BY WILLIAM T. BRIGGS, M.D.,

Nashville, Tenn.

Living in the midst of the stone region, and in a city whose celebrity as a surgical centre has been long established, it has been my fortune to have met with an unusually large number of cases of vesical calculi.

As a pupil of the illustrious Dudley and a witness of his skilful treatment and beautiful manipulation in many cases of stone, and as an assistant of the late Professor Paul F. Eve, who was a distinguished lithotomist, I became deeply interested in the subject early in my professional life, and have given much time and study to its consideration for the past forty-two years. I have had two hundred and eighty-four cases of stone under observation. The Southern States have furnished the greater number of the cases; a few have come from Western States. Tennessee, Kentucky, and Alabama have supplied the largest number; but Georgia, Florida, Texas, Arkansas, North Carolina, Virginia, Missouri, and Illinois have contributed cases.

Two hundred and seventy-two of the number were males, twelve females. One hundred and fifty-three were children or youths under twenty years of age; one hundred and thirty-one were adults, varying in age from twenty-

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[1] Read before the Southern Surgical and Gynæcological Association, 1893.

one to eighty. It is a singular fact that in my early practice nearly all my stone patients were children under fifteen. For the last fifteen or twenty years, fully three-fourths of the patients have been adults, quite a number over sixty-five. The oldest patient was eighty years, the youngest eleven months. Two hundred and seventy-four were white, two were negroes, eight mulattoes. Multiple stones were found in ten cases, in one case thirteen, in four cases three each, in six cases two each. The largest stone extracted (crushed) weighed five and a half ounces, the smallest twenty grains. The collection contains uric acid, oxalate of lime, phosphate, triple phosphate, and the alternating calculus, the latter being quite frequent. Two hundred and fifty-three patients were submitted to operative treatment. Thirty-one were not operated on. Fourteen were so worn down with long-continued suffering that operative measures were denied them, and the results justified the decision, for death speedily ensued in each of these cases. Seven refused to submit to operative treatment. In ten cases the stone was spontaneously expelled *per vias naturales*, in three soon after the examination with the sound.

In operations for stone I have not restricted myself to any single method, recognizing the fact that every case of stone in the bladder has its especial indications, and the best results can only be attained by the surgeon who has a practical knowledge of all methods of operating, and who appreciates the great importance of selecting the operation best adapted to the case under consideration. I have done all of the operations, both cutting and crushing, and I consider it very fortunate that surgery has so many resources for the relief of this distressing and painful malady. The success of every method of operating largely depends on the preparatory treatment of the patient. The pre-eminent success of Dudley, Mott, and others was doubtless due to the judicious treatment employed in the preparation of subjects for the operation; and I am sure that my own success has been greatly enhanced by a strict observance of the preparatory treatment. The treatment consisted of such measures as will remove or diminish the irritability and inflammation of the bladder and urethra, correct the morbid condition of the urine, and restore the general health. In most cases the treatment was followed in a comparatively short time by a mitigation of the painful and distressing symptoms which had so long harassed the patient, and occasionally the relief was so great that the patient was inclined to doubt the diagnosis of the surgeon and to withdraw from his care. In some cases, however, no treatment, general or local, had any good effect: patients continued to become more and more emaciated and debilitated, and the constitution more shattered, while the urine was filled with pus and stunk with putridity. I have under such circumstances positively declined to operate, because in my judgment fatal results rapidly follow the operation in every instance.

I have submitted five patients to the old-fashioned method of crushing (lithotrity), with recovery of the patient in every instance. Long be-

fore the necessary sittings were finished, the patience of myself and of my patients was completely exhausted, and they clamored for the more rapid, if more bloody, operation of cutting. In two cases, either because fragments were left or the calculus recurred, it was necessary to lithotomize the patient before the end of the year. I had about determined to crush no more stones when Professor H. J. Bigelow announced his method of rapid crushing and removal of the fragments at one sitting. Litholapaxy rapidly won the favor of the surgical world, and has completely superseded lithotrity, and is threatening the extinction of all cutting methods except the supra-pubic, which it claims as an ally. I was at once captured by the bloodless and easy method of ridding the tortured bladder of its burden, and turned my attention to the study of its adaptability to cases under my care. I was convinced that in many cases it was the operation *par excellence*, and should be chosen as a general rule of practice, when the environments of the case were favorable. In my opinion, the selection of this method of operation is based on four conditions. 1. Adult patients. 2. Capacious and tolerant urethra. 3. Small or medium-sized stone; or, if large, of soft consistence. 4. Bladder capacious and free from severe and persistent inflammation.

When chosen under these conditions no operation in the whole range of surgery is more successful and satisfactory in its results. If calculi were detected and submitted to this operation in their early stage, before the health was broken down and local involvements had occurred, no other operation could be desired. In my experience the conditions necessary for the success of the rapid crushing operation are very seldom present when patients come under the surgeon's care. As a rule, they do not seek advice until the stone has become very large, causing serious pathological changes in the urinary organs from the persistent and continued presence of chronic cystitis, and the general health has become broken down.

I am aware of the fact that many very distinguished surgeons claim that litholapaxy is the safest and best operation under these and all other circumstances, except when the stone is unusually large and hard, and then they claim that the case should be submitted to the supra-pubic section. I must take issue with them on this point, and when the claim is made that with the improved modern instruments adapted to children litholapaxy is the safest and best for children, I must again dissent. While it is true that great improvements have been made in litholapaxy as applied to children, it cannot equal certain methods of cutting operations. The results of lithotomy in children are so satisfactory that nothing is left to be desired. It is one of the triumphs of surgery. When the small size and delicate texture of the urethra, the high position of the bladder, and the erethism of the nervous system in children are considered, it can readily be believed that a smooth incision into the neck of the bladder and the gentle withdrawal of the stone will be followed by better results than the prolonged and tedious manipulations of litholapaxy. In my own practice seventy-six

children under sixteen years of age submitted to the medio-bilateral operation, recovered fully and thoroughly, except one who died from an intercurrent dysentery. In a majority of the cases no after-treatment was necessary except cleanliness; and the little fellows were up and well in a few days. I have performed litholapaxy ten times in adults. The operations were attended with no difficulty, and were satisfactorily accomplished in a reasonable length of time. In one of the cases, the stone, weighing three ounces, was crushed and removed in forty minutes, with complete success. In two cases death resulted from renal complications. I still think the operation is one of the most valuable resources of surgery, and shall continue its practice whenever suitable cases are presented.

I regard the supra-pubic as a special operation. It is particularly adapted to, and should always be selected for, the removal of stones too large to be extracted through the perineum without tearing and bruising the soft parts, and too hard to be fragmentized through the perineal incision. It should always be selected and practised for the removal of very large and hard calculi. In such cases it has proved to be safer than any other method. Under other conditions, however, the dangers surrounding the operation are much greater than those attending the perineal methods. I have done the supra-pubic in seven instances for the extraction of very large and hard calculi: in five the recovery was entirely satisfactory; in two death resulted. I tried the median method in three cases, but found it entirely inadequate for the withdrawal of any except small or medium-sized calculi, which could better be dealt with by litholapaxy. I found that it did not afford sufficient drainage, and did not offer an incision large enough for fragmentation.

Educated in the school of Dudley, and thoroughly impressed with the principles involved in the treatment of urinary calculi instilled by his admirable teaching, I started in professional life with a strong predilection for the lateral operation, and my first operation was by that method, but after many careful and minute dissections of the perineum, I was satisfied that the lateral method modified, and improved by Cheselden in the seventeenth century and but little changed since, was not the best method for the removal of stones from the bladder; that it did not satisfy anatomical requirements; that it made an oblique instead of a direct passage to the bladder; that there was often a lack of parallelism between the external and the internal incisions, thereby interfering with free drainage, a matter often of vital importance; that it did not afford more space for the extraction of calculi than other perineal methods; that the incision necessary often divided large vessels, and frequently passed beyond the boundaries of the pelvic fascia.

When I came to Nashville and saw the beautiful operations of the late Professor Paul F. Eve by the bilateral method, I at once adopted it, and continued its practice for a number of years. I did forty-four operations by this method, with four deaths,—one in ten. I thought the rate of

mortality too high, and became dissatisfied with it. A circumstance which occurred about this time increased my mistrust in the bilateral method.

I visited a young man in the eastern part of the State, and removed a large stone by the bilateral operation; a profuse hemorrhage followed, which was promptly checked by the shirted catheter. Through a misunderstanding of the medical gentleman left in charge of the case, the tampon was removed too soon; the hemorrhage returned, a solution of Monsel's salt (in which the attendant had great confidence) was applied, hemorrhage soon recurred, iron was again applied, hemorrhage recurred, and so on until the patient bled to death.

I then determined to seek a safer operative route for the extraction of stone. After numerous dissections about the bladder both above and below the pubic bone, I selected the perineal raphé as the best point for entrance into the bladder for the removal of a foreign body. Nature seems to have destined the raphé for such an operation, for it is a mere tendinous union of the perineal muscles, serving to separate the important structures of one side from those of the other, and permitting the surgeon's knife to reach and to open the bladder without injuring any structure of great importance. It will be remembered that the superficial parts of the perineum, with the exception of the raphé, are composed of highly dilatable tissues, the tension of which is maintained by the raphé itself. If this is divided, the dilatability becomes very great. The relative dilatability of the parts can be well illustrated by a sheet of India rubber through which passes a moulded seam, itself inelastic and exerting tension upon the sheet of rubber. If an incision be made in the length of the seam, the dilatability of the section will be as much greater than a transverse or oblique section as the circumference of a circle is greater than its diameter. It was upon the principle of dilatation that Allerton originated the modern median operation, and were the deeper-seated structures as dilatable as the superficial, the median operation would be of all methods the most desirable; but there is a serious obstacle to the stretching process at the neck of the bladder, in the prostate gland, and in the circle of muscular fibres around the neck. These structures can be dilated only to a limited degree; when, however, they are slightly incised bilaterally, they yield to dilatation as readily as the more superficial parts. The capacity of the opening, after a longitudinal incision in the raphé, combined with a slight bilateral incision of the prostate gland and the elastic ring at the neck of the bladder, is almost incredible to one who has not tested it. It is sufficient to permit any stone which can pass through the pelvic outlet to be extracted safely. This is the modification of the median suggested by Civiale in 1829, and practised by him in all cases which he subjected to the cutting operation. It was called by him the medio-bilateral method.

The advantages of the operation over others are:

1. *That it opens up the shortest and most direct route to the bladder,* passing in a straight line from one-third of an inch anterior to the verge of the anus

to the neck of the bladder; it facilitates the introduction of instruments and the removal of calculi.

2. *It divides parts of the least importance.* The incision following the median line does not encounter any structures of importance, nor does the slight bilateral sections of the deeper structures do violence to tissues of vital consequence. The section does not pass beyond the limits of the prostate gland nor the reflection of the deep perineal fascia. There is but little danger of wounding the rectum if proper precautions are used, although the knife passes in very close proximity to it.

One of the main arguments used in favor of litholapaxy and the suprapubic section is, that they do not injure the seminal ducts, by which a patient would be unsexed. I have made especial investigations in reference to this question, and in a number of sections in the perineum of the cadaver I found no injury to the ducts after the medio-bilateral operation, and the subsequent history of a number of patients upon whom I had operated has shown that many have become the fathers of children, and in no instance has a patient been left in the condition of the eunuch. The incision in the medio-bilateral method passes almost directly outward from the sides, from the prostatic urethra, and could not possibly encounter the ducts. I am well satisfied that sterility is not a frequent sequence of this method of operation.

3. *It is almost a bloodless operation.* When the incision closely follows the middle line of the perineum as intended, even if it encroaches on the bulb of the urethra, no vessels of any size are divided, since they have spread, so to speak, on the outer side of the raphé, while the cross section, passing but a few lines from the middle, encounters no arteries of any importance; so that the loss of blood is small, seldom amounting to an ounce. This immunity from hemorrhage depends on the incision being made strictly in the middle line.

4. It affords a sufficiently capacious passage for the removal of any calculus which can be safely removed through the perineum, and is admirably suited for drainage.

5. I reduced the death-rate to the minimum.

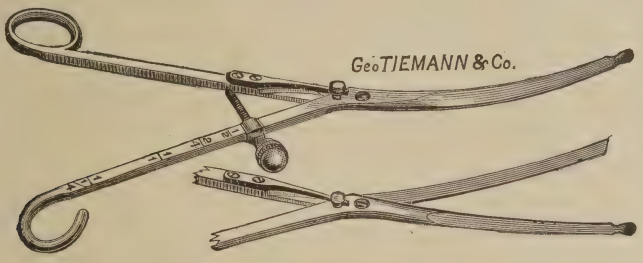
Possessing, as I think it does, the advantages mentioned, it is my conviction that the medio-bilateral operation, skilfully executed, is devoid of danger to life, and that, in the absence of organic disease of the kidneys or other vital organs, every patient submitted to it will recover. In a majority of cases neither fever nor other unpleasant symptoms occur. Patients are usually up in a week, and in twelve or fifteen days, frequently sooner, the wound is entirely healed.

I have now performed the medio-bilateral operation one hundred and seventy-one times, in patients of all ages, from the infant at the breast to the octogenarian, with the result of one hundred and sixty-seven complete recoveries and four deaths. The fatal result in three of these cases should not be attributed to the operation. One of the number died of phthisis

pulmonalis three months after the operation, with the wound unhealed; another died from an intercurrent dysentery, still another from surgical kidney, followed by immediate suppression of urine and uræmic poisoning.

The staff, scalpel, and lithotomy forceps are the only instruments really necessary for the operation. To facilitate the cross section of the deep-seated parts, Mr. Stohlman, of the firm of Tiemann & Co., designed for me this instrument I now exhibit to you, which is admirably suited for the purpose. I use it in all my operations.

Fig. 1.



Briggs's cystotome.

Technique.—The technique of the operation is as follows: After the pubes and perineum have been shaved and rendered aseptic, the bladder is washed out with a boracic acid solution (leaving a few ounces in the bladder), the patient is secured in the lithotomy position, the staff introduced into the bladder and made to touch the stone. It is then entrusted to an assistant, who is instructed to draw it well up under the arch of the pubes and to maintain it in that position, at the same time to grasp the scrotum and penis and draw them up so as to render the integumentary structures of the perineum tense, and to elongate the membranous portion of the urethra as much as possible (it may be elongated two or three lines), thereby carrying the bulb further from injury. However, hemorrhage from the bulb is of no moment when the incision is made strictly in the median line.

The surgeon, seated before the patient, introduces his left index-finger, well oiled, into the rectum and draws it directly backward; a narrow sharp-pointed knife is entered in the raphé, three or four lines from the verge of the anus, and pushed directly into the groove of the staff. It is then carried forward so as to open the membranous urethra to the extent of three or four lines; withdrawing the knife from the urethral canal, the incision of the superficial parts is completed by a division of the raphé upward to the extent of an inch and a half or two inches; or an incision may be made in the raphé, commencing an inch and a half above the anus, terminating within a few lines of its margin. In the posterior part of this incision a careful dissection is made, successively dividing the tissues down to the groove, and the urethra opened. The beak of the instrument—cystotome, as it has been called—is introduced into the groove of the staff, passed into the bladder, disengaged, and withdrawn open, making in its

withdrawal a section of three lines on each side. The finger is then introduced into the wound and guided along the upper surface of the staff into the bladder and in contact with the stone. The staff is then withdrawn. The wound is slowly and gently, but freely, dilated with the finger. To no operation is the maxim "*Festina lente*" more applicable, for haste on the part of the operator may cause a laceration instead of a dilatation of the perineal tissues.

In a few cases, in persons advanced in life, I found the neck of the bladder firm and undilatable, even under continued gentle manipulation. In these cases I was compelled to resort to the probe-pointed bistoury, which, guided by the finger, made an incision on each side of sufficient extent to permit the easy extraction of the stone. A pair of light forceps is passed on the finger into the bladder, which serves to dilate the parts still farther. The stone, being grasped, is drawn downward in the axis of the pelvis by gentle but firm traction. If much force seems necessary, withdraw the stone by pressure of the fingers in front of the stone. After the stone has been removed, the bladder should be thoroughly washed out with a warm antiseptic solution until all *débris*, clots of blood, etc., have been washed away. Then a firm elastic tube, a quarter of an inch in diameter, should be introduced into the bladder and iodoform gauze packed loosely around it, with the object of draining the bladder perfectly for thirty-six to forty-five hours. No other treatment than perfect cleanliness is necessary.

In conclusion, my experience in the surgical treatment of stone in the bladder will sustain the following propositions :

1. No method of operation is adapted to all cases.
2. Thorough preparatory treatment is essential to success.
3. Litholapaxy is *the* operation when the patient is an adult with a capacious and tolerant urethra, with a bladder free from severe chronic cystitis, and with a small or medium-sized stone, or, if large, of soft consistence.
4. The supra-pubic is the best operation for large and hard calculi.
5. The medio-bilateral should be chosen in all other conditions, because it is the easiest, safest, and *best*.

REVIEW OF MEDICINE.

MEDICINE.

IN CHARGE OF JUDSON DALAND, M.D.,
Instructor in Clinical Medicine and Lecturer on Physical Diagnosis and Symptomatology in the University of Pennsylvania, and Assisting Physician to the University Hospital.

Rheumatism of the Lower Extremities and its Relation to Arterio-sclerosis. (Ueber den Rheumatismus in den unteren Extremitäten und seine Beziehung zur Arteriosklerose. *Deut. Med. Woch.*, No. 8, 1893.) By Z. von Manteuffel.

This author attributes many cases of so-called rheumatism in the lower extremities to arterio-sclerosis. The subjective symptoms are an indefinite pain, felt now in the sole of the foot, now in the small bones, now on top of the foot. The objective signs are a yellowish, blanched dryness of the skin, as if dusted with meal, and an absence of rose-color in the nails. Often a peculiar red œdematous swelling can be observed, that fluctuates with the subjective symptoms. In ten cases in women and two in men the author has found the cause for these symptoms in arterio-sclerosis. The diagnosis is difficult in the lower extremity, except for the objective symptoms. The author ascribes the œdema to autochthonic thrombi. The treatment should be directed towards lowering the blood-pressure: rest should be advised, and exposure to sudden changes of temperature avoided. When œdema comes on, elevation and rest of the limb must be employed. The heart should be strengthened by slight exercise, especially of the upper extremities and body, with some massage of these parts. Massage of the affected limbs is, however, to be avoided. Cool baths alone are to be employed.

The Relation of the Pancreas to Diabetes Mellitus. (Beziehung des Pankreas zum Diabetes mellitus. *Deut. Arch. für Klin. Med.*, Band lii., p. 171, 1893.) By G. Hoppe-Seyler, of Kiel.

The author reports a case of diabetes mellitus in which the post-mortem showed both macroscopic and microscopic pathological changes in the pancreas. After a careful review of the literature upon this subject the author explains the development of this disease of the pancreas that can lead to diabetes mellitus in the following manner: The pathological process first attacks the arteries, their walls are thickened, their lumen narrowed or altered. In consequence there follows a lack of nourishment in the part supplied, a thickening of the connective tissue about the acini of the gland,

with degeneration and loss of glandular tissue. In like measure as these tissues decrease the interacinous fat tissue increases; it increases rapidly till the pancreas reaches a size larger than the normal. The process in the kidney is analogous, except that the adipose tissue is encapsulating rather than interstitial. Thus the pancreas loses its function-power in much the same manner as is seen in progressive muscular atrophy, with fatty degeneration. After the pancreas loses its functional power diabetes mellitus comes on.

Bradycardia of Reconvalescence. (Ueber die Bradycardie der Reconvalescenten. *Deut. Arch. für Klin. Med.*, 1893, Band lii., p. 74.) By K. Dehio, of Dorpat.

In a former paper this author has proved that a differential diagnosis can be made between the functional and the organic diseases of the heart which produce bradycardia. This he shows by using the action of atropine on the vagus nerves, an accelerated action after its use showing that the vagus or central nervous influence had inhibited the action of the heart. If the heart remains unaffected, it proved that the influence was peripheral or intra-cardial. He considers as cases of bradycardia in the convalescent those cases in which the pulse-rate, falling with the temperature, goes with it below normal, and remains below 60 per minute after the temperature has again reached the normal. In this paper he analyzes seven cases which he treated by this method, injecting into the pectoral region a small dose of atropine, and counting the pulse every five to ten minutes until the action of the drug ceased. By this method he found that the slowing of the heart's action was not an independent functional anomaly, but the partial expression of what the full development proves to be a failing heart, and that it is an expression of heart weakness, or might be termed an irritable weakness of the heart, and must be so treated. Its clinical signs are those common to weakening and arythmia of the heart.

THERAPEUTICS.

IN CHARGE OF ALEXANDER D. BLACKADER, B.A., M.D.,
Professor of Therapeutics, McGill University, Montreal, Canada.

The Treatment of Psoriasis by the Internal Administration of Thyroid Extract. (*British Medical Journal*, October 28, 1893.) By Byrom Bramwell, M.D.

The author was led to try this treatment in consequence of observing the very definite effects which the remedy produces on the nutrition of the skin in cases of myxœdema and sporadic cretinism. Desquamation in these cases is so marked that he inferred, that if thyroid tissue can produce

such an extraordinary effect upon the nutrition of the skin in myxœdema it might possibly produce a similar effect in cases of skin-disease. He reports several cases in which the results obtained were very remarkable, and warrant a further trial of the remedy not only in psoriasis but in other affections of the skin, and especially in exfoliative dermatitis.

Jaundice due to Simple Obstruction successfully treated by Olive Oil. (*The Lancet*, October 7, 1893.) By Thomas Oliver, M.D.

The writer reports two cases in which symptoms, which had persisted for many months under vigorous medicinal treatment by himself and others, gradually disappeared under the administration of olive oil. He says, "In the treatment of recurrent hepatic colic, I do not claim for olive oil that it dissolves the gall-stones, nor do I regard the greenish concretions passed per anum by patients thus treated as softened gall-stones. Microscopical and chemical examination have shown them to be practically nothing else than inspissated oil. Nevertheless, as to its decided influence for good in certain cases of obstructive jaundice, I have no doubt. In such cases our experience at present is in advance of the therapeutical explanation."

Acute Meningitis treated by the Drainage of the Spinal Cord. (*The Lancet*, October 7, 1893.) By Stephen Paget, F.R.C.S. Eng.

The writer, after referring to previous attempts to relieve the tension in meningitis by incision of the dura mater of the cervical cord, relates his own experience in the case of a young lad aged eight years. After the symptoms unequivocally pointed to meningitis, the arches of the fourth and fifth cervical vertebræ were removed and the dura mater was punctured. The fluid spurted up with force in a high jet till four or five ounces had escaped. The dura mater was then freely opened and a horsehair drain inserted. The operation gave distinct relief, but only for a day, and the drainage of the cerebro-spinal fluid after the operation did not effect the removal of the collection of fluid in the cranial fossæ, or reduce the inflammatory swelling of the brain which was the chief cause of death. He advises in a similar case to make a free opening in the vault of the skull after incising the dura mater in the cervical spine.

The Action of Bicarbonate of Sodium upon Gastric Secretions. (*Bulletin Gén. de Thérapeutique*, September 8, 1893.) By Dr. M. A. Gibbert.

The author records the results of a series of experiments made upon dogs with both natural and artificial solutions of bicarbonate of sodium. In large doses administered either with or shortly after food, it reduced the acidity of the stomach contents throughout digestion, but in small doses it merely reduced the acidity temporarily, and was followed by marked hyperacidity. Given before food large and small doses produced an abnormal

quantity of hydrochloric acid. He infers therefore that given after food large doses may be of service in hyperacidity, but when the secretion of hydrochloric acid is deficient small doses of the alkali before meals are indicated.

The Permanganate of Potassium as an Antidote for Phosphorus Poisoning. By Antal (*Ung. Arch. für Med.*, Band i., H. 3 u. 4), Haynas (*ibidem*), Erdös (*ibidem*, H. 5 u. 6).

These authors give some very interesting results of research in this matter. Antal's dogs, poisoned by phosphorus in milk, after drinking quantities of a solution of potassium permanganate, varying in strength from fifteen to twenty to fifty per cent., recovered completely in two hours, while others, in whom the phosphorus was immediately washed out, died. On the strength of these researches this author recommends in phosphorus poisoning the drinking of from one to two quarts of a one-fifth- to one-third-per-cent. solution of potassium permanganate, this dose to be repeated.

Haynas, in two cases of acute phosphorus poisoning, poured into the patients' stomachs one quart of a one-tenth-per-cent. permanganate of potassium solution; both patients took the medicine well, with only slight nausea, and left the hospital cured in a few days. Erdös had equally good results in a severe case of poisoning,—a gallon of a one-fifth- to one-tenth-per-cent. solution being used, and the patient recovered in ten days.

PEDIATRICS.

IN CHARGE OF T. M. ROTCH, M.D.,

Professor of Diseases of Children, Harvard University; Visiting Physician to the Children's Hospital, Boston.

ASSISTED BY

E. M. BUCKINGHAM, M.D.,

Instructor in Diseases of Children, Harvard University; Visiting Physician to the Children's Hospital, Boston.

Dietetic Glycosuria in Artificially-Fed Infants. (*Archives of Pediatrics*, October, 1892, p. 780.) By Koplik.

Glycosuria in children is so rare that the field has been but little explored. The great percentage of glucose or of substances readily becoming converted into glucose in many of the advertised baby foods, led the author to examine the urine of children fed upon them. Urine was obtained by catheter and was examined by Fehling's test and by fermentation. Only cases were used in which the writer had seen the food administered. Sometimes the color of the urine was normal, but occasionally when the sugar percentage was high the yellow color mentioned by Görz was seen. Ten different urines were examined, and control experiments were carried on at the same time with the urine of breast-fed children having no gastric or

intestinal disturbance. These last examinations were negative. The author had no children under his eye who were still taking an artificial baby-food and whose condition was at the same time an ideal one to external appearance. All of the ten children were suffering from gastro-intestinal disorders. All had colic from excessive gaseous formation in the intestine. One-half of them had glycosuria, though sugar was seldom present in large amount, and was found only in cases where large amounts of glucose were taken, and there were no cases with high specific gravity. In two of the cases of glycosuria opportunity was had to place the children on different diet, generally sterilized milk, and in them sugar disappeared from the urine at the same time that symptoms improved.

Görz found sugar to be absent from the urine of healthy breast-fed children, and that such children could ingest large quantities of milk-sugar without showing its presence in the urine or suffering ill effects. As soon, however, as there was any gastro-intestinal disturbance even in these children, a certain percentage showed sugar in the urine, and this even with the normal quantity of breast milk. From the facts in Koplik's possession, he can at present only conclude that in his cases a transitory glycosuria was present.

Process of Disinfection at Besançon. (*Annales d'Hygiène Publique*, October, 1893, p. 333.) By Dr. Baudin.

The workmen engaged in disinfecting apartments at Besançon wear linen overgarments which are always fresh, being renewed every time that they are removed even for meals. After service they with other things to be removed to the public steam apparatus are covered with a linen cloth dipped in a disinfectant. During their work no others are allowed on the premises. Objects of small value are burned. For two or three hours before work begins the apartment is closed that the air may become still, and care is taken to disturb the air as little as possible during work. The floor and the horizontal surface of the furniture are wiped with strong corrosive sublimate solution except that leather and cloth and the curtains are not wiped. Curtains are wet with weak solution and rolled to be carried away, also rugs, clothing, and the like. Clothing that cannot be immersed is simply sprayed. Furs, leather, and rubber are not steamed, but objects that would be ruined by immersion or heat are sprayed with corrosive. Pictures and other delicate objects are wiped with weak corrosive and dried with aseptic flannel; leather and wood, either plain or varnished, are dried immediately after disinfection. Feathers are immersed, then wiped and dried. Objects soiled with blood, grease, or wine are soaked in a weak corrosive solution. Beds, either iron or wood, are washed, care being taken that the disinfectant enters the cracks. After disinfection and drying, objects that are waxed or varnished are lightly oiled. Table and chamber wares are boiled ten or fifteen minutes. Ceiling, walls, and windows are sprayed with a weak solution, working methodically and making a second application to parts that

are soiled, an hour later. Painted or papered walls are treated like others, but with a gentle spray. If wall-papers are soiled, they are removed before disinfection, and the wall is afterwards washed with slaked lime. Lastly, the floor is washed with strong corrosive. If the room is to be soon used, it is again sprayed, this time with solution of carbonate of sodium. Plumbing is disinfected with sulphate of copper.

SURGERY.

IN CHARGE OF HENRY R. WHARTON, M.D.,

Demonstrator of Surgery and Lecturer on Surgical Diseases of Children in the University of Pennsylvania; Surgeon to the Presbyterian Hospital, the Methodist Episcopal Hospital, and the Children's Hospital; Consulting Surgeon to the Presbyterian Orphanage.

AND

J. P. TUNIS, A.M., M.D.,

Assistant Demonstrator of Surgery in the University of Pennsylvania.

The Operative Treatment of Senile and of Diabetic Gangrene of the Lower Extremity. (Zur operativen Behandlung der senilen und diabetischen Gangrän der unteren Extremität. *Deut. Zeitsch. für Chir.*, Band xxxvi. p. 149.) By M. Landow.

This author follows in the footsteps of König, while his work is in sharp contrast to the theories of Z. v. Manteuffel and Küster as exemplified by their work of late years. These latter authors advise high amputation in the middle or lower third of the thigh, or through the knee-joint, except in those cases where the diseased area is small or limited to the toes and has a well-defined line of demarcation.

The experience of this author does not lead him to believe, nor does König believe, that so radical an operation is necessary. The author's experience extends over ten years, in which eighteen patients were treated, —one woman and seventeen men,—whose ages ranged between forty and seventy-nine years. Seven were pure cases of arterio-sclerosis, the others were diabetic. The treatment was at first local and expectant, with elevation, antiseptic dressings, and incision of phlegmonous collections. In the diabetic case diabetic treatment was also employed. This local treatment generally sufficed for the local symptoms, and as soon as the line of demarcation was formed an amputation only two or three fingers'-breadth above was done. Of the eighteen cases seven died,—one, of diabetic coma, before any operation; one, one and a half years after operation, from gragrene of the other extremity; one died after amputation through the tibia; while four died after amputation through the thigh.

Massage of the Prostate. (Ueber Massage der Prostata. *Wien. Med. Woch.*, 1893, No. 20, 21.) By M. Schlifka.

In chronic prostatitis, that is so frequently a sequela of gonorrhœa,

inflammation of the prostatic urethra, etc., and leads to difficulty both in urination and sexual function, this author would recommend, and has seen good results follow, the massage of the prostate through the rectum. This consists of pressure, with stroking lengthwise of both glandular portions. The patient should assume either the recumbent or the elbow-and-knee position. This treatment, somewhat painful at first, becomes easy, and should be repeated every two days for a few minutes at a time. Improvement is first noticed after the fifth or sixth sitting. This treatment exercises an especially good influence on the troublesome urinary symptoms.

Arrest of Development following Traumatism in Infancy. (Arrêts de développement consécutifs à des traumatismes de l'enfance. *Rev. de Chir.*, October, 1893.) By Ch. Féré.

The author reports a case in which, as a consequence of a burn received in infancy, which was limited in extent, superficial, and included the back of the hand and of the four fingers, there existed a notable atrophy of the upper extremity; this atrophy included the thumb, although it had not been burned. It would seem that its function should have been exaggerated, rather than diminished, to make up for the lost function of the hand. The author would draw from this the conclusion that the prognosis in cases of traumatism in infancy is not very favorable, and that one may expect the atrophy to extend beyond the limits of the traumatism. The pathology of this atrophy and its cause lies in doubt, for immobilization was probably employed and may have tended to produce the result seen.

ORTHOPÆDICS.

IN CHARGE OF REGINALD H. SAYRE, M.D.,

Assistant to the Chair of Orthopædic Surgery, Bellevue Hospital Medical College, New York.

Apparatus for Recording the Curve of Rotation in Scoliosis. (*Am. Med. Surg. Bull.*, November, 1893.) By L. A. Weigel, M.D., of Rochester, New York.

The apparatus presented is designed to afford a ready and accurate means for recording rotation. It is mounted on a thin board, of convenient size, which is to be placed in any convenient way vertically over the patient, who should be in the recumbent posture. The apparatus consists of two parallel rods, upon which a trolley moves horizontally, guided below on one of the rods by three grooved rollers, and above by a fork, which clasps the upper rod. To the trolley is attached a pencil, which is held against the paper by a light spring, and is readily drawn away from contact with the paper, when the machine is being brought into position for starting. The vertical rod ends below in a fork, which carries a roller, which is so constructed that it may revolve upon its own axis, and also to allow it to

swing around the pins as a centre. The movement of the whole mechanism across the board is controlled by a drum, which contains a spiral spring, and winds up the cord attached to the upright rod, as the tracing is being made. This, together with the helical spring which controls the vertical movement



Apparatus showing patient in position to take a tracing.

of the rod, renders the apparatus almost automatic in its action, it being necessary only to guide the roller across the patient's back. The marking pencil takes the horizontal movement of the trolley in combination with a vertical movement derived from the rod, which moves up or down as the roller passes from left to right, and thus gives an accurate reproduction of the surface over which it runs.

In using the apparatus, a piece of paper or thin white card is attached to the board by means of thumb-tacks; the pencil being held away from the paper until the trolley with its attachments is drawn across to a proper position for starting. The whole mechanism is so simple in its action that but a few seconds are required to make a tracing.

In recording rotation it is advisable to make tracings at different portions of the back, and to note the special vertebræ over which tracings were made. Thus, tracings from corresponding points may be compared from time to time.

DISEASES OF THE LARYNX, NOSE, AND SURROUNDING STRUCTURES.

IN CHARGE OF J. PAYSON CLARK, M.D.,

Physician for Diseases of the Throat, Massachusetts General Hospital; Physician to the Throat Department, Boston Dispensary.

Recurrent Tonsillitis.—Dr. G. A. Leland (*Boston Med. and Surg. Journ.*, October 12, 1893) says that the excision of a tonsil which is full of crypts usually fails to reach the bottom of the crypts, although often of great benefit. If the stump does not atrophy, as it commonly does not, the pillars of the fauces are still widely separated, impairing the flexibility of articulation. The writer advocates in these cases the tearing away of the partitions between the crypts so as to connect them. He at first used the blunt hook devised by Hoffman for the purpose, but, encountering tonsils too tough to be easily torn by a blunt instrument, he had the inner edge of the instrument made sharp. "The olive-shaped tip of the knife is introduced into a crypt in the upper part of the tonsil and then turned downward and inward and made to come out by another in the lower part. The substance of the organ between these two holes is then cut through." This can be repeated several times at a sitting. There is usually not much hemorrhage, and as soon as it has ceased the slits are painted with Monsel's solution, or with a mixture of glycerin and tincture of iodine, equal parts. Any small projections can be readily nipped off later. The variety of enlarged tonsils in which the crypts are not so much developed or diseased is much benefited if the capsule is torn or cut and the solution applied to its interior, and perhaps even if only adhesions between the tonsil and the faucial pillars are cut away. A number of successful cases are reported.

Reducing the Tonsils.—Dr. T. A. De Blois (*Boston Med. and Surg. Journ.*, October 12, 1893) believes that galvano-caustic puncture, while not a perfect method, is the best we have at present at our command for reducing the size of enlarged tonsils. The operation is performed under cocaine anæsthesia. The cautery point is pushed about a quarter of an inch into the tonsil, avoiding the crypts. The pain is not very severe. Slight inflammation follows and a little sloughing from the burned parts. Diminution of size, estimated at about a quarter, occasionally follows at the end of ten days after the first burning. The igni-puncture should be repeated perhaps three times. About half the cases will show some improvement after the first burning. In about a quarter of the cases this treatment will prove so slow or so unsatisfactory that resort will have to be had to tonsillotomy.

Laryngitis Hiemalis.—Dr. J. C. Mulhall (*New York Med. Journ.*, October 14, 1893) describes nine cases of an affection to which he gives this name. It is a variety of subacute catarrhal laryngitis with adhesive crusts

on the true cords, interarytenoid folds, and false cords, producing mechanical dysphonia (more often complete aphonia), occurring only during winter. The predisposing cause is not known. The evidences of inflammation in the larynx are usually quite slight. The affection may be acute, or may last the entire winter without appropriate treatment. It may occur only once or be relapsing. It is associated with no other bodily ailment. Neither rhinitis atrophica nor pharyngitis sicca is present. Careful attention to the rules of hygiene is the most important factor in the treatment.

A Case of Foreign Body impacted in the Larynx.—Dr. F. E. Hopkins (*Boston Med. and Surg. Journ.*, October 26, 1893) reports an interesting case of the lodgement of a pointed wedge-shaped piece of bone in the larynx, where it remained five days before it was removed. It entered the right ventricle and rested on the anterior half of the right vocal cord, extending during inspiration somewhat beyond the median line. The left ventricular band was superficially ulcerated, inflamed, and swollen from friction against the rough surface of bone. The amount of inflammation in the larynx, however, was surprisingly small. The foreign body was so firmly impacted and so tightly grasped that it was feared some serious laceration might be caused in removing it. Under cocaine anæsthesia it was finally grasped by forceps, loosened with some difficulty, and then coughed out by the patient.

Intubation of the Larynx in Private Practice: Results in Seventy-eight Cases. (*Boston Med. and Surg. Journ.*, October 5, 1893.) By C. M. Whitney.—Divided according to age there were,—

	Cases.	Recoveries.
Under one year	2	0
One to two years	12	3
Two to three years	18	6
Three to five years	20	5
Five to ten years	26	12
	78	26

This table shows thirty-three per cent. of recoveries. When there is persistent and increasing retraction of the intercostal, supersternal, and superclavicular spaces, no advantage is to be gained by waiting, but intubation should be done at once. The writer mentions some changes he has made in the apparatus, and gives careful directions about the details of introducing the tube. A list of articles of food which may be administered during the wearing of the tube is given. From the fourth to the sixth day the tube should be removed. This is far more difficult than its introduction. An extractor devised by Dr. Nichols, of the Boston City Hospital, is favorably mentioned. Intubation is an operation especially adapted to private practice, —always available, can be done early, and is painless and bloodless. It is not advisable when the tonsils are so large that they prevent the necessary manipulation, or when the fauces are full of putrid *débris* and the epiglottis is immovable from the destructive action of the disease.

PATHOLOGY.

IN CHARGE OF ALLEN J. SMITH, A.M., M.D.,

Professor of Pathology in the Medical Department of the University of Texas, Galveston, Texas.

On Lipoma of the Tongue, Multiple Symmetrical Lipomata and their Etiology.—Dr. Julius Rosenstirn (*Medical Record*, September 23, 1893), from a study of several cases of lipomata, makes certain suggestions supporting the views of Grosch (*Deutsch. Zeitsch. f. Chir.*, Bd. xxvi. p. 307) as to their etiology. The latter writer, struck by the marked preference exhibited by lipomata in their distribution for certain positions in the body, as the back of the trunk and the arms, questioned why, if fatty tumors are growths from stray embryonic elements as Cohnheim taught, they should not be more evenly distributed over the whole surface of the body; and concluded, from examination of a large number of records at his disposal and the experience of a number of authors, that the cause of lipomatous growth in many instances depends upon an acquired or hereditary tendency to general adiposis, and that their localization depends largely upon the relative paucity of sebaceous glands in preferred situations. According to this view, positions in which a large proportion of fat is naturally deposited in well-nourished individuals should be common seats for the appearance of lipomata, as the back of the trunk, the back of the neck, and the arms. The truth of this inference actually prevails, save, perhaps, in case of the abdominal wall. This discrepancy Grosch endeavors to explain on the ground that adipose deposit is a normal condition in these tissues on account of their nearness to the digestive canal. After reviewing Grosch's belief, Rosenstirn relates two cases of symmetrical lipomata, in one of which occurred the rare appearance of a lipoma on the dorsum of the tongue. Besides this rare feature in this first case there were present symmetrically arranged lipomata of the arms. The patient was a young man, slim, apparently healthy when first seen, but dying within a few years from acute tuberculosis. The writer suggests that there existed here some connection between the cessation of fat storage in one part of the body (from the phthisical tendency) and a consequent increase or new formation (the tumor growth) in another. The second case was one of classical symmetry; the subject was a full-blooded negro, aged fifty-three years, weighing two hundred and twenty-five pounds, of excellent physique, with both alcoholic and syphilitic taint. Both these cases in the distribution of the tumors followed the views indicated by Grosch; but the author is disposed to believe that, while perhaps there does underlie a predisposition to adiposis as an etiological factor, yet the symmetrical localization of lipomata depends rather upon a centric nervous fault. Whether the centre for the skin-glands is affected, overcoming them in their work, with the subsequent formation of lipomata as a consequence, or whether the fat deposit here is regulated centrally by the aid of certain irritations, is uncertain.

CLIMATOLOGY.

IN CHARGE OF GUY HINSDALE, M.D.,
Lecturer on Climatology in the University of Pennsylvania, Philadelphia.

Health-Resorts of the West and Southwest. (*Medical News*, December 16, 1893.)—Dr. H. G. Wetherill does not believe that Arizona, Western Texas, and Southern New Mexico are suitable as health-resorts for the phthisical. The disadvantages are the alkaline water, distasteful and disturbing to those unaccustomed to it; the prevalent dust; the hot sun. "The hotels in Albuquerque, El Paso, Tucson, Phœnix, and Yuma are bad. . . . The food is wretched, and the people one meets, with a few notable exceptions, are not attractive companions. . . . In Arizona the disease [tuberculosis] is common and fatal among the native population, —the Indians having it in a rapidly fatal form, like that which affects our negro." Dr. Wetherill advocates Northern New Mexico, Colorado, and Southern Wyoming, laying great stress on the better society, more diversions, abundant, cheap, and good saddle-horses, better food, lodging, and transportation facilities. Dr. Wetherill concludes by warning the patient to keep out of dust and out of crowds, and lays more stress upon the life followed than the place selected. "There are many places within a few hundred miles of New York where nature is as undisturbed and the atmosphere as pure and free from dust and disease germs as any that can be found west of the Mississippi. The Adirondacks in New York, piny regions in New Jersey, or the wilds of Pike County, Pennsylvania, offer about all the advantages of Colorado excepting extreme dryness and great elevation; and it is only under certain circumstances, and for certain well-selected cases, that these are necessary or desirable."

The Influence of Climate on the Breathing Habit, with a Comparison of American Climatic Resorts. (*Medical News*, November 11, 1893.)—Dr. S. S. Wallian shows that pulmonary tuberculosis, lithiasis, the neuroses, chronic nephritis, diabetes, and fatty degenerative processes are the direct or indirect sequelæ of persistent and habitual sub-oxidation, and that this result depends chiefly upon a passively induced want of normal robustness in connection with the breathing habit. Suitable climates for the tuberculous are compared, and the preference given to Southern California. Dr. Wallian cautions the invalid against overheated and over-upholstered hotels. He characterizes Colorado, as well as the Adirondack Mountains, as a decidedly heroic resort, claiming that to realize their benefits in the fullest degree the patient must be sufficiently robust to live out of doors in all seasons, to camp, fish, shoot, or botanize in the mountains, or to herd cattle on the plains, etc. In Southern California (San Diego) it is never necessary to close the houses either to exclude the heat of summer or the cold of winter. Awnings are not required in summer, and very little

fire in winter. Free and constant ventilation is thus assured. Dr. Remondino states that rheumatic, neuralgic, and laryngeal cases do better in the interior; convalescents from protracted illness, those suffering from insomnia or the debilitating stages of advanced pulmonary tuberculosis, are more benefited by the bracing air of the coast.

OBSTETRICS AND GYNÆCOLOGY.

IN CHARGE OF RICHARD C. NORRIS, M.D.,

Demonstrator of Obstetrics in the University of Pennsylvania; Physician to the Preston Retreat; Consulting Obstetrician and Attending Gynæcologist, Southeastern Dispensary and Hospital for Women and Children.

The Great Medical Error of the Day. (*University Medical Magazine*, January, 1894.) By William Goodell, M.D.

Under this title the author calls attention to the great injustice which many medical men and specialists do to their female patients in ascribing to their sexual organs, or to any insignificant laceration or tear, all the symptoms which their highly-strung, sensitive nervous organizations in many cases show, not from these causes or such slight irritation, but from nervous exhaustion. The tendency of the present day is too much towards a desire to operate, rather than to cure without operation, and patients are too often subjected to innumerable operations when it is but the nervous system that is deranged, and that simulates in symptomatology a lesion of the sexual organs. The author cites a number of cases that have come under his own personal observation, in which a too eager operator has attempted to remove the nervous symptoms of his patient by a gynæcological operation. "The physician of the present day is too apt to jump from any distinctly female ache to an ovarian conclusion without delay or misgivings. The possibility of a nerve origin or of a nerve complication should be the *fore*-thought, and not the *hind*-thought of the physician."

The Alexander Aliquié Operation. A Radical Modification (Kocher, of Bern), with a Case. (*Medical Chronicle*, London, December, 1893.) By Fred. Edge, M.D., F.R.C.S., M.R.C.P., B.Sc.

In operating upon a case of prolapse and retroflexion of the uterus by this method the author employed the modification of Kocher, which he believes added greatly to the success, or at least to the improved condition, maintained until the present.

The operation consists in opening the inguinal canal so as to gain a clear view of the field of operation, thus being able to isolate the round ligaments with ease, and, most important point of all, he could control the drawing out of the peritoneal diverticulum and treat it according to its condition. He found that the uterus was drawn more anterior and higher by

drawing upon the ligaments in the direction of the anterior superior iliac spine than by pulling it in the usual direction, so he extended his superficial incision parallel to Poupart's ligament as far as the anterior superior iliac spine, and stitched the extended ligaments upon the aponeuroses of the external oblique muscle in the required direction.

The uterus is controlled and fixed during the operation by an assistant *per vaginam.*

Results of Vaginal Hysterectomy. (*Medical News,* November 4, 1893.) By Andrew J. McCosh, M.D.

This author reports the results of his sixteen operations. There were no deaths from operation. Fifteen patients were kept under observation. These were free from malignant disease after vaginal hysterectomy for carcinoma of the uterus, one patient five years after operation, one four years after, one two years after, one one and one-half years after, two one year after, two one-half year after, and four less than three months after operation. There have died from return of the carcinoma at the end of thirty-three months one, at the end of seven months one. There are alive, but with return of the disease, either locally or in other organs, three years after operation, one patient; one year after operation, one patient. Four patients have had a return of the disease out of the sixteen operations. This ratio cannot, of course, be considered a fair one, or one that can be universal. The results of this operation can only be estimated when more cases and the results of operations four years previously have been given. The cases in which the author has done hysterectomy for the cure of aggravated prolapse have not given satisfactory results, and he believes that, as a rule in such cases, abdominal hysterorrhaphy (hysteropexy) is the preferable operation.

REVIEW OF ITALIAN, SPANISH, AND PORTUGUESE MEDICINE.

IN CHARGE OF A. M. FERNANDEZ DE YBARRA, M.D.,
New York,
Corresponding Member of the Medico-Chirurgical Academy of Madrid, Spain, the Argentine Medical Circle of Buenos Ayres, South America, and the Society for Clinical Studies, of Havana, Cuba; Executive Assistant Secretary-General of the First Pan-American Medical Congress.

Subacute Pneumonia. (*Gazzetta Medica di Torino,* June 15 and 22, 1893.) By Dr. Riva-Rocci.

There is a variety of pneumonia which, viewed from the evolutionary nature of the disease, is perfectly distinct, because it runs its course in twenty-four hours. German physicians call it "*eintagige pneumonie.*" The term *ephemeral* would be an appropriate one were it not for its implication of benignity. The best appellation is *subacute pneumonia,* of which it is convenient to form two separate groups.

I. One is characterized by the rapidity of the pathological evolution, and the suddenness of the cure, which begins immediately after the first twenty-four hours of the onset of the disease. *Herpetic fever:* an intense cold chill, followed by a rapid increase of temperature, a little dyspnœa, dry cough, labial herpes, and recovery on the morning of the day after. *Rudimental pneumonia of Kühn:* initial shivering, vomiting, marked prostration, an uncomfortable sensation in a particular spot of the chest, harsh respiratory murmur on a point not well defined of the lung, in which there is no change of resonance nor any modification in the vocal fremitus. The following day the fever disappears, and there is complete euphoria. *Abortive pneumonia of Wunderlich:* to the above symptoms there are added a violent cough, with pain in the side and sanguinolent expectoration; on some point of the chest the respiratory murmur and vocal fremitus will be found obscured; fine crepitant râles during inspiration; gradual defervescence, the fever finally disappearing on the second or third day. *Pulmonary hyperæmia:* well-developed crepitant râles, and the febrile movement prolonged to the third or fourth day.

In all these forms there is pulmonary congestion due to the presence of Fraenkel's pneumococcus, detected by Dr. Riva-Rocci in every case. In true *subacute pneumonia* the pathological process does not cease at once with the initial period, but continues to complete development. Clinically, the pneumonic symptoms that appear suddenly in the period of intensity persist to the last, but the defervescence follows shortly after, accompanied by signs of resolution of a complete hepatization. The author gives a thorough clinical observation of his own, which serves him to discuss the pathogeny of the subacute variety of pneumonia, and to propound this important question: the slight virulence of the attack can explain the transitory hyperæmia, but if there is a fibrinous exudation how is it that it disappears so soon? It cannot be supposed that the fibrinous exudation constantly reproduces itself under the influence of the pneumococci. The persistence of this exudation is perhaps due to the general pulmonary engorgement, but soon the râles formed by the return current make their appearance much earlier than the allaying of the general symptoms. Dr. Riva-Rocci is inclined to the opinion that the prematureness of the resolution is due to the general reaction of the whole organism.

II. The second group of the subacute variety of pneumonia is characterized by the *swiftness of death*, which takes place during the first twenty-four or forty-eight hours. These forms of the disease occur in cachectic subjects (Grisolle, Jürgensen), so that, for instance, in a person suffering some organic affection of the heart, the sickness may kill him in the very moment of the initial shivering. On the other hand, it is necessary to include in this group the pernicious forms of pneumonia that kill during the first twenty-four hours, and whose general symptoms are from the very beginning so alarming that they resemble more closely the manifestations of a serious systemic cataclysm than the signs of a true pneumonia. These

destructive forms are not due to pneumococcus infection, but are rather the deadly work of staphylococci and streptococci.

If the pathogeny of the first of these two groups of subacute pneumonia is connected with the mechanism of recovery in pneumonitis, the pathological process of the second group is also joined to the mechanism of death in that affection. Bichat thought cessation of life in pneumonia began at the lungs; Jürgensen proclaimed that the heart was master of the situation. The modern theories of toxæmia give the preference to the insufficiency of the renal emunctory. Dr. Riva-Rocci thinks that all these theories are too exclusive, and that death supervenes in a general way in all the organs of the body at the same time, and not by this or that particular function, be what it may the theoretical explanation. The important point is to establish the clinical facts.

FORENSIC MEDICINE.

IN CHARGE OF LORENZO D. BULETTE,
Of the Philadelphia Bar.

LEGAL RESPONSIBILITY OF THE PHYSICIAN AND DRUGGIST FOR WRITING AND COMPOUNDING INJURIOUS PRESCRIPTIONS.

THE nature and extent of the legal responsibility attaching to the physician who makes a mistake in writing, and of the druggist who negligently compounds, a prescription thus improperly written, whereby serious, perhaps fatal injury results to the patient, is a question frequently presented to the courts for determination.

Are the physician and druggist liable jointly or separately? Or does the subsequent carelessness of the druggist, in failing to detect the error in the prescription, have the effect of curing the physician's negligence, and render him alone liable?

Where the action is one of damages for the negligence merely, without any consideration of a criminal intention, the question has never been free from difficulty, but it has assumed increased importance in view of the new rules now invoked by courts to protect the rights of persons injured by the concurrent or successive negligence of independent agents. The difficulty in these cases was to determine the efficient culpable cause—the *causa causans*—of the injury.

Formerly, in some jurisdictions at least, the successive negligent acts of independent agents operating to cause the same injury did not render them

jointly liable,—that is to say, the recovery of damages against one of the derelicts precluded a recovery against his companion in fault. Accordingly, in Massachusetts,[1] where a joint action was brought against a physician who prescribed, and the druggist who compounded, a noxious medicine, it was decided that they were not jointly liable.

But at this time the prevailing, perhaps universal, tendency is to make all concurrent negligent agents jointly and severally liable in damages to the injured party. Accordingly, in Blank *vs.* Baker,[2] it was decided that the fact that a prescription, by a slip of the pen, was improperly written, thereby causing the death of the person taking it, did not constitute a defence to an action for damages against the physician for negligence in writing the prescription, even though the druggist who filled it was negligent in doing so.

This action, which was against the physician alone, was for damages for negligence; and the complaint alleged the prescription of a "poisonous medicine, to wit, the tincture of opium, otherwise known as laudanum." The negligence which was the basis of the action consisted in improperly writing *pulv.* instead of *camph.* after *opii.* The result was that the infant for whom the medicine was prepared took it and died.

The prescription was headed "For George Baker (baby)," and the physician testified that he had directed the family to take his prescriptions to another drug-store than the one where it was filled.

The proper form for a prescription of laudanum, as the preponderance of evidence showed, is "*Tr. opii,*" and the addition of *pulv.* is not used, though it adds nothing to the meaning, while the addition of *camph.* does change it.

On behalf of the physician an offer was made (which the trial court refused) to prove a custom among druggists in the city of X. to the effect that where a prescription shows on its face, as this one does, that it is for a baby, such prescription would not be filled without consultation with the physician; and arguing that the negligence of the druggist, which the physician could not anticipate, was the proximate cause of the misfortune, thus relieving the physician from liability.

But the Appellate Court took a different view of the matter, and decided that, "at most, the negligence of the druggist concurred with that of the physician in producing the result, and this," as above stated, "is not a defence." "No error was committed, therefore, in refusing to admit evidence of the custom" sought to be established; and the judgment of the lower court mulcting the physician in damages was affirmed.

The court, in affirming this judgment, said in effect that the consequences were such as should reasonably have been foreseen, and that such slips of the pen, whereby human life is jeopardized, are inexcusable as not showing the exercise of that reasonable degree of care which the law requires.

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[1] 2 Hilliard on Torts, p. 297.

[2] 43 Ill. App., 590.

At the same time, it should be added that the druggist is placed upon the same footing of responsibility as physicians. His want of the requisite reasonable knowledge and skill may be shown in an ignorance of the laws of chemical combination and compatibility of substances; of the law of doses; of the means of determining the quality of drugs; and a consequent inability to judge of their actual condition and effects at any given time.[1] The druggist impliedly warrants not only the good quality of his drugs, but also that in all the prescriptions dispensed by him they are compounded according to therapeutic and not literal interpretation. Any negligence on his part, consisting either in a departure from the terms of a prescription or in adhering to one manifestly erroneous, and damage ensuing therefrom, renders him liable to respond in damages to the person injured.

BOOK REVIEWS.

CHEMISTRY AND PHYSICS. By Joseph Struthers, Ph.B., Columbia College School of Mines, New York, D. W. Ward, Ph.B., Columbia College School of Mines, New York, and Charles H. Willmarth, M.S., New York, price $1.00. (The Students' Quiz Series.) Philadelphia, Lea Brothers & Co., 1893.

This little book deals with those parts of these sciences which are requisite to a thorough medical education. The most important information is presented tersely in the form of questions, which receive clear and distinct answers. The book is carefully illustrated, and physicians as well as students will gain advantage from its use.

DUANE'S STUDENTS' DICTIONARY OF MEDICINE. The Students' Dictionary of Medicine and the Allied Sciences. Comprising the Pronunciation, Derivation, and Full Explanation of Medical Terms, together with much collateral descriptive matter, numerous tables, etc. By Alexander Duane, M.D., Assistant Surgeon to the New York Ophthalmic and Aural Institute; Reviser of Medical Terms for Webster's International Dictionary. In one square octavo volume of 658 pages. Cloth, $4.25; half leather, $4.50; full sheep, $5.00. Philadelphia, Lea Brothers & Co., 1893.

In the preparation of this book the author has aimed to give succinct but sufficient information concerning every word that the physician would be likely to meet with in the course of his professional life. Many obsolete words have been omitted, and the book confined to the smallest space possible. Under the names of the principal diseases a brief outline is given of their causation, symptoms, and treatment. The structure and functions of all the more important organs are detailed, while under each drug may be found an account of its action and therapeutic use. Much encyclopædic information is in this way embodied in the work, and forms the characteristic feature of this dictionary. A very simple system of pronunciation has been adopted, which is at the same time perfectly adequate for the purpose. Especial care has been taken to define the original words from which medical terms have been derived, and those unfamiliar with the Greek tongue will find this system most satisfactory, as the words are printed in large type and the original Greek letters

[1] Ord. Med. Juris., p. 284.

have not been used. Many anatomical data have been brought together, as well as tables of temperature, of fermentations, and of monstrosities.

The type is good, so as to render the reading of the text easy, and the important words are distinctly printed in large type, thus rendering reference to the book easy and satisfactory. It should prove a useful book for students, and presents a much more attractive appearance than the larger medical dictionaries. The publishers have bestowed every care upon the details of its preparation, and nothing is wanting in the typography to make it thoroughly satisfactory.

NOTICES.

THE SAMUEL D. GROSS PRIZE OF THE PHILADELPHIA ACADEMY OF SURGERY.

The quinquennial prize of one thousand dollars under the will of the late Samuel D. Gross, M.D., will be awarded January 1, 1895. The conditions annexed by the testator are, that the prize "shall be awarded every five years to the writer of the best original essay, not exceeding one hundred and fifty printed pages, octavo, in length, illustrative of some subject in surgical pathology or surgical practice, founded upon original investigations, the candidates for the prize to be American citizens."

It is expressly stipulated that the successful competitor, who receives the prize, shall publish his essay in book form, and that he shall deposit one copy of the work in the Samuel D. Gross Library of the Philadelphia Academy of Surgery. The essays, which must be written by a single author in the English language, should be sent to Dr. J. Ewing Mears, 1429 Walnut Street, Philadelphia, before January 1, 1895.

Each essay must be distinguished by a motto, and accompanied by a sealed envelope bearing the same motto and containing the name and address of the writer. No envelope will be opened except that which accompanies the successful essay. The committee will return the unsuccessful essays if reclaimed by their respective writers, or their agents, within one year. The committee reserves the right to make no award if the essays submitted are not considered worthy of the prize.

ELEVENTH INTERNATIONAL MEDICAL CONGRESS, TO BE HELD AT ROME, MARCH 29, 1894.

A letter directed to the undersigned by the Secretary-General of the Eleventh International Medical Congress, and dated December 19, 1893, contains the following communications:

"American members will pay on the English, French, and Italian railways single fares for double journeys, and will obtain a reduction of twenty per cent. on fares for Italian round-trip tickets.

"The documents required for their identification will be sent to you in January, and Americans intending to visit the Congress will have to apply to you for them.

"Full particulars concerning the journeys will accompany the documents.

"Messrs. Thos. Cook & Son, London, Paris, Rome, and Naples, should be applied to for accommodation and for tickets for the excursions at Rome, Naples, and to Sicily. Such excursions will be arranged at Rome under the guidance of Mr. Forbes, member of several scientific societies and correspondent of the *Times*. For Naples, three days, including Vesuvius, Pompeii, Capri, Sorrento, Castellamare, Baja, etc.; for Sicily, ten days from Naples, including Messina, Taormina, Catania, Girgenti, Siracusa, Palermo, and return to Naples.

"The fares for members of the Congress will be considerably reduced, and comprise hotel accommodations, carriages, guides, boats, etc.,—about 70 francs each for the three days, and 285 francs for the ten days.

"Full particulars concerning these excursions will be contained in a leaflet to be added to the instructions and documents for the journey."

From former communications the following are herewith quoted: The members' fee is five dollars, that of their wives or adult relations two dollars each. Checks or money orders may be sent to Professor L. Pagliani, Rome, Italy. It is suggested that a passport may increase the traveller's facilities.

Only the North German Lloyd (22 Bowling Green) and the Compagnie Générale Transatlantique (3 Bowling Green) have thought fit to grant any reductions to Congressists.

The reductions on Italian railways are available from March 1 to April 30.

A. Jacobi, M.D., 110 W. 34th Street, New York.

COMPULSORY FOUR YEARS' COURSE AT JEFFERSON MEDICAL COLLEGE.

At a meeting of the Faculty of Jefferson Medical College, held on January 8, 1894, it was unanimously resolved to institute a compulsory four years' course of medicine, commencing with the next session of 1895–96.

NOTE TO CONTRIBUTORS.

Accepted manuscripts will be liberally compensated for, immediately upon publication; or reprints, if stated on the manuscript, will be furnished in lieu of such compensation. It is distinctly understood that all articles appearing as original matter are for our exclusive use, and are not to appear in any other publication excepting the transactions of the society before which the paper may have been read.

All matters of business, as well as subscriptions, should be sent to the International Medical Magazine Company, 716 Filbert Street, Philadelphia.

Manuscripts, exchanges, and books for review should be addressed to the Editorial Office, 3455 Woodland Avenue, Philadelphia.

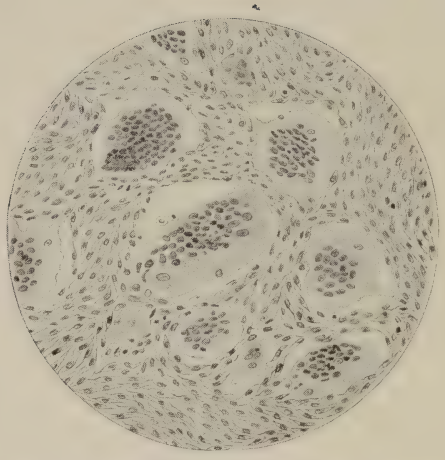


FIG. 1.—GIANT-CELL SARCOMA. The section is made from a portion in which the giant-cell formation is well advanced. About each giant cell the space separating it from the rest of the tissue can be distinctly seen.

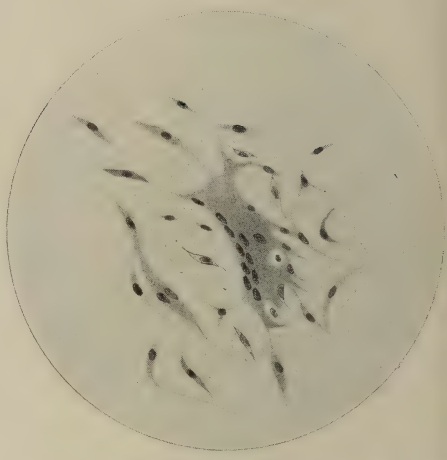


FIG. 2.—GIANT-CELL SARCOMA. From a part of the tumor where the formation of the giant cells by the confluence of the protoplasm of neighboring cells is well shown.

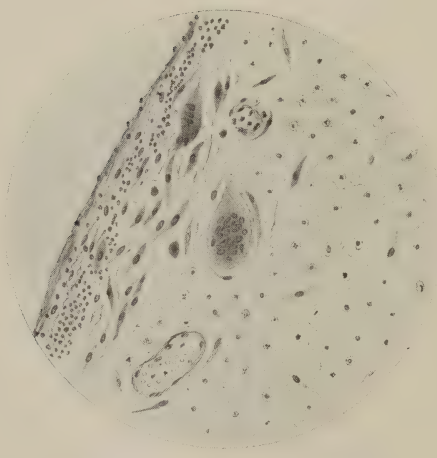


FIG. 3.—GIANT CELLS IN GRANULATION TISSUE. The field shows many degenerated epithelioid cells, some of which have fused.



FIG. 4.—GIANT CELL OF TUBERCLE. In this specimen the change of a whole tubercle into a giant cell is shown. The large cell, with peripherally-arranged nuclei, is all that remains of what was once an epithelioid cell tubercle.

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ORIGINAL COMMUNICATIONS.

FURTHER OBSERVATIONS UPON GIANT CELLS.[1]

BY JOSEPH McFARLAND, M.D.,

Demonstrator of Pathological Histology in the University of Pennsylvania; Pathologist to the Episcopal Hospital.

THE paper of which this is a further development appeared in the INTERNATIONAL MEDICAL MAGAZINE for November, 1892 (vol. i., No. 10), and had special reference to the large multinuclear cells found in tuberculosis, made famous by Langhans as "Riesenzellen mit wandständigen Kernen." After a critical review of the numerous ideas advanced to explain the existence of these peculiar formations, and a careful consideration of the cells themselves and the relation they bear to the tubercle-bacilli, the paper concluded as follows:

1. Giant cells are cellular monstrosities, accidental and not purposeful, resulting from the overgrowth of epithelioid cells.
2. This overgrowth is brought about by a mechanical or chemical irritation caused by the presence of a foreign body, whether a living or dead micro-organism or some inert particle.
3. Being the offspring of a cell possessed of amœboid and phagocytic properties, the giant cell possesses them to some degree, as shown by the ingestion of foreign particles.
4. Whether living, active tubercle-bacilli are thus devoured must remain *sub judice*.

[1] Read before the Philadelphia Pathological Society, December 28, 1893.

5. The giant cell exerts no special deleterious influence upon the tubercle-bacillus, but seems instead to be injured by it, a more observable degeneration occurring in those cells which contain many bacilli than in those which contain none.
6. The giant cell of tubercle does not differ essentially from giant cells elsewhere, except that it shows a more marked tendency to undergo cheesy degeneration, a fact probably due to the peculiar poisonous products of the bacilli in the tubercle.

Since that was written, the second edition of Israel's "Pathological Histology" has appeared, and expresses substantially the same view, and I have also had the opportunity to examine many more giant cells in all stages of development, in different lesions of various organs. While it does not seem necessary to withdraw the statements made in the paper, it is necessary to add that the formation of giant cells by the overgrowth of the epithelioid cells, as described, is a rare, rather than a usual phenomenon.

There are, in fact, two kinds of giant cells to be found in tubercle, one of which occurs in the early stages of its development and grows from the healthy epithelioid cell, the other, marking the degenerative stage, formed by the fusion of degenerated cells.

The incorrectness of my former observations must be attributed to a misapprehension that the origin of the large cells could be discovered by a study of the small ones. The two things have nothing at all to do with each other, and we might almost say that the large giant cells of Langhans have never been small ones.

Allowing the hypotheses of the former paper to refer to the small giant cells, found in fresh and undegenerated tubercles, without any coagulation-necrosis of their protoplasm, another explanation is offered for the large giant cells so characteristic of tubercle.

It need scarcely be pointed out that what I offer in explanation of these structures is not original, as a reference to the former paper will show that Langhans, who first directed the attention of pathologists to their peculiar shape, suggested that they might be formed by the fusion of neighboring cells, and supported the hypothesis by calling attention to the pigmented condition of the protoplasm of giant cells occurring in the choroid and retina, where the connective-tissue cells normally contain pigment.

The inaccuracy of the former observations necessitates a careful description of that which really takes place.

Giant cells occur in normal bone tissue, in granulation tissue which is exposed to the injurious action of enclosed foreign particles or to irritating discharges, in sarcoma, and in tubercle. While sometimes occurring elsewhere, their presence in tissues other than those mentioned is rare.

The study of a fragment of granulation tissue which accidentally came into the laboratory was most interesting, and served as the starting-point of the present research. After trachelorrhaphy the sutures placed in the cervix were not sufficient to close the wound completely, a gap being left in

one spot. From this a soft granulation about the size of the head of a small shawl-pin projected, and, as it "looked angry," the surgeon snipped it off and sent it to me for examination.[1]

The structure proved to be a simple granulation which was devoid of interest, except that at the surface a peculiar change had taken place in the protoplasm of the epithelioid cells. While these cells were few in number, they were most numerous at the surface of the tissue, and were almost all in a condition of hyaline degeneration, or, perhaps more correctly, coagulation-necrosis, and presented a dark, vitreous appearance. The cells, at the very surface, had fused, and formed for the growth an irregular capsule, which at first glance seemed fibrous, but on closer inspection was shown to be cellular.

Near this capsule all the cells were similarly degenerated, though not confluent. Immediately below there was a stratum of leucocytes, which suggested that the growth was subject to external irritation, which might be largely responsible for the coagulation-necrosis of the cells. Below the leucocytes were numerous degenerated epithelioid cells, which here and there united to form larger masses, of which many were distinct giant cells like those shown in Fig. 3.

The close resemblance of this tissue and its giant cells to sarcoma suggested a careful study of that tissue for comparison. Fig. 1 shows the ordinary appearance of giant-cell sarcoma, in which the cells will be seen to bear a certain resemblance to those in Fig. 3. From a part of the tumor so fully developed as that shown in the illustration, little information concerning the genesis of the giant cells can be obtained. They appear to be large, independent protoplasmic masses, containing large numbers of nuclei, often vacuolated, and having irregular borders with prolongations extending between the surrounding cells. Each giant cell is seen to occupy an open space in the tissue. When carefully observed, the protoplasm of the giant cell and of all the surrounding cells is seen to be degenerated.

If a very thin section be made of a part of the tumor in which there are few giant cells, a very different picture is obtained; Fig. 2 shows such an area. The great magnification to which the section was subjected has lessened the extent of the field, which shows a giant cell in what might be called its formative stage. In such a field all the spindle cells are degenerated, vitreous, and apparently sticky. Some are extended as long processes, some are confluent with their neighbors, the result of this continued confluence being the formation of a giant cell. After careful study of a field like Fig. 2 it is difficult to believe that the cells are not in the act of flowing together to form a mass. This is, without doubt, the evolution of the giant cells of sarcoma. Does the same thing occur in tubercle? The fact that coagulation-necrosis is constant in tubercle would seem to suggest it,

[1] This specimen was sent to me by my friend Dr. Charles P. Noble, of the Kensington Hospital for Women.

but, as this form of degeneration generally gives rise to a compact granulo-hyaline mass, in or between which and the surrounding tissue the giant cell is situated, the conditions favorable for proof are not easy. After searching many tubercles in the hope of finding the formative stage of the giant cell, a tuberculous cyst of the ovary was received and proved to be exactly what was required. The walls of this cyst were of extremely delicate granulation tissue, rich in blood-vessels, and studded with myriads of tubercles so small as to be almost invisible to the naked eye. When carefully prepared sections of this tissue were studied, a most unexpected and remarkable condition of some of the tubercles was observed. All kinds of miliary tubercles were present, some lymphoid, some epithelioid, some reticular, some degenerated, some with giant cells. The most interesting were very small tubercles, made up of epithelioid cells. When superficially examined no more was seen than has been indicated, but careful study showed that these epithelioid cells were all more or less degenerated, vitreous and adhesive, and attached by their poles and processes so as to form a loose, reticulated, cellular mass. Here and there cells could be seen which were attached throughout half their length, the fusion being so complete that no separation could be made out. It will not be inconceivable to regard this mass, reticulated as it is, as a giant cell, the outcome of this coalescence of the cells resulting in the conversion of the whole tubercle into a giant cell, which then appears to exist independently in the normal surrounding tissue, as in Fig. 4. All stages between this typical cell and fresh tubercles, consisting of epithelioid cells, could easily be found.

It will be observed that in the sarcoma, and also in the tubercle, the giant cells are surrounded by a space which intervenes between them and the tissue. The hypothesis of development just offered will explain this. When the cells of the tissue are in their normal condition and relation, narrow spaces exist between them, and wider spaces between bundles or groups of them. When the degenerated cells flow together, the resulting mass occupies much less space than the original cells, hence is surrounded by the sum of all the intercellular spaces. This space is proportionate in size to the giant cell. Though simple, this explanation adds additional proof to the hypothesis of formation, for, unless these spaces originate in such manner, how can we account for their presence in so dense a tissue as spindle-cell sarcoma?

In the giant cell of sarcoma the nuclei have no definite relation to the protoplasm or to each other. Perhaps in the majority of cases the long diameters of the nuclei are in the same direction. This, however, is generally true of the cells themselves, which are arranged in bundles, and which do not alter their direction during the act of fusion.

In the giant cell of tubercle the nuclei almost always form an encircling wreath, equatorial band, or polar mass, probably due, as was formerly pointed out, to more pronounced degeneration in certain areas than in others. In these cells the nuclei likewise correspond pretty regularly in the direction

of their long diameters. Karyokinesis is never observed in giant cells formed by the coalescence of degenerating cells.

The method of development just described would seem to place no limit to the size of the giant cell, which might continue to increase until whole tissues or organs were included. Examination of a number of sarcomata or tubercles will satisfy one that there is a certain limit which is rarely passed. Why is this?

When the giant cell becomes large, it is separated from the surrounding cells by so wide a space that it is only here and there that its neighbors are contiguous to it. It can be readily understood that when such a condition exists, the formation of new giant cells is more readily accomplished than augmentation of the old.

This formation of giant cells takes place only when the coagulation-necrosis is of slow development. When the degenerative change is rapid, the cellular destruction is such as to produce the molecular or fragmentary masses known as "caseation." When the degeneration is slow, a vitreous and adhesive quality of the protoplasm takes place, with the described results.

The study of these cells also gives us a partial explanation of the process of coagulation-necrosis, which seems to consist primarily in a loss of vitality characterized by unusual transparency, adhesions, and confluence of the affected cells, secondarily, of contraction or shrinkage of the diseased elements. If this be correct, it is easy to understand how the cells which at first form a reticulum are subsequently drawn together to form a compact mass.

MEASUREMENTS OF THE CHEST AND LUNG-CAPACITY.[1]

BY EDWARD O. OTIS, M.D.

I PRESENT these measurements of the chest and lung-capacity as representing with a fair degree of accuracy the dimensions of the chest of an average man. I trust they will serve as reliable data in chest examinations. A comparison of my averages is given along with those of other examiners, and, as you see, they differ but slightly from one another. I know of no other published averages of the antero-posterior and lateral diameters of the chest with which to compare mine. The difference in these diameters in ordinary and deep inspiration is an important factor, it seems to me, in estimating the freedom and fulness of respiration.

My experience also convinces me that the measure of the so-called "complemental" air, the result of the difference between the "lung-capacity"

[1] Read before the American Climatological Association, Philadelphia, May 27, 1893.

and the amount of air exhaled after an ordinary quiet inspiration, is an important one in the study of the respiration of any individual, whether with or without diseased lungs. It is a significant fact that the amount of complemental air diminishes after practice in deep breathing, and this by the increase of both the factors involved in obtaining it, but more by the increase of the second factor, viz., the amount of air exhaled after an ordinary quiet inspiration. I am deeply convinced of the importance of measuring accurately in this way, with spirometer, calipers, and tape, the character of the respiration, as to the expansion and movement of the chest, as well as its freedom and fulness. This datum, added to that obtained from auscultation and percussion, gives us a pretty complete knowledge of the condition of the respiration and chest expansion.

Such an examination as I suggest is equally valuable as a prophylactic measure. I am constantly impressed with this, as well as the satisfactory results obtained from deep breathing and lung-expanding exercises.

TABLE I.

Chest Measurements.

Girth of Chest. Muscular.	Repose.	Inflated.	Difference.
Men.			
Average of Dr. E. O. Otis, one thousand measurements, between sixteen and forty years of age...	34.0 inches.	36.1 inches.	2.1 inches.
Average of Dr. Hitchcock, of Amherst College. Eight thousand measurements	34.6 inches.	36.5 inches.	1.9 inches.
Average of E. Hitchcock, Jr., of Cornell College. Fifteen thousand measurements.....	34.5 inches.	36.3 inches.	1.8 inches.
Women.			
Mt. Holyoke and Wellesley students. Measurements of Miss Wood and Dr. Mary Colton.....	29.5 inches.	31.5 inches.	2.0 inches.
Respiratory Chest.			
Men.			
Average of Dr. E. O. Otis. One thousand measurements.....	31.1 inches.	33.1 inches.	2.0 inches.
Women.			
Fifty per cent. of fifteen hundred Wellesley students. Miss Wood	24.6 inches.	27.2 inches.	2.6 inches.
Depth of Chest.			
Men.			
Average of Dr. E. O. Otis. One thousand measurements in repose and one hundred and twelve measurements inflated...	7.3 inches.	8.2 inches.	0.9 inch.

Depth of Chest.	Repose.	Inflated.	Difference.
Women.			
Fifty per cent. of fifteen hundred students at Wellesley. Miss Wood	6.9 inches.		
Breadth of Chest.			
Men.			
Average of Dr. E. O. Otis. One hundred and fifty measurements	9.6 inches.	10.8 inches.	1.2 inches.

TABLE II.

Capacity of Lungs.

Men.

	Cubic Inches.
Average of Dr. E. O. Otis. One thousand measurements	240.6
Hitchcock. Eight thousand measurements	230.0
Hitchcock, Jr. Fifteen thousand measurements	236.6
Women.	
Mt. Holyoke and Wellesley students. Measurements of Miss Wood and Dr. Mary Colton	145.8
Fifty per cent. of fifteen hundred Wellesley students. Miss Wood	150.3

TABLE III.

Comparison of the "Vital" or Lung Capacity and the Amount of Air Expelled after an Ordinary Quiet Inspiration. Average of Dr. E. O. Otis. One Hundred and Fifty Measurements.

	Cubic Inches.
Vital capacity, or the amount of air exhaled after a full inspiration	230.5
Amount of air exhaled after an ordinary quiet respiration	129.3
Difference, or "complemental" or "reserve" air	101.2
Difference as given by Hermann	97.6

THE DIFFERENCE BETWEEN CERTAIN WOUNDS INFLICTED BY THE PROJECTILES OF LARGE AND SMALL CALIBRE HAND-WEAPONS.[1]

BY CAPTAIN LOUIS A. La GARDE, U. S. ARMY.

The subject of gunshot wounds has received a new impetus, at least for the military surgeon, as it may be said that we have arrived at another epoch in the development of the military rifle. Since the publication of a pamphlet by Professor Hebler, a German artillery scientist, in 1888, advo-

[1] Read before the College of Physicians of Philadelphia, May 3, 1893, by Dr. Guy Hinsdale.

cating the small-bore rifle, the foreign governments, one after another, have adopted the small-bore weapon.

The ballistic feats of the small-bore guns have been lauded in the daily press and medical journals to such an extent that the velocity and penetration of their projectiles seem well-nigh incredible. That the new weapon is superior to the rifles of ten years ago propelling leaden projectiles there is no doubt. Chauvel and Nimier[1] state, as a result of extensive experiments with the Lebel rifle, the portable gun of the French army, that its projectile has velocity and penetration sufficient to make it redoubtable for the human body at 2775 yards. In a recent lecture by Dr. Johann Habart, Royal and Imperial Regimental Surgeon of the Austrian Army, we read that the projectile of the new Mauser rifle,—the hand-weapon of the German army,—which corresponds very nearly to the Lebel of the French, can penetrate with great facility all parts of the human body of small density and resistance at even a distance of 5000 steps, and he cites a case in proof of this assertion.

Among the many advantages of a small-bore gun pointed out by Hebler the following may be especially mentioned:

1. Lighter ammunition.
2. Flatter trajectory and greater dangerous space.
3. Less deviation by wind.
4. Less recoil.
5. Greater penetration.
6. Greater accuracy.
7. The wound produced, while being sufficient to disable, is much more humane.

We have, however, adopted a projectile which is to be used by the Krag-Jorgensen or whatever gun we may hereafter adopt.[2] This projectile is now manufactured by the Ordnance Department, at Frankford Arsenal, and corresponds in resistance to the projectiles of the small-bore rifles of the foreign powers.

For the purpose of ascertaining the effects of this projectile our ordnance officers have manufactured the Experimental Springfield rifle of 0.30 calibre. This weapon, with the projectile referred to, possesses for all practical purposes ballistic qualities equal to those of the new Mauser, the Lebel, Maennlicher, etc.

The two weapons which especially concern us this evening are the 0.45 calibre Springfield rifle and the 0.30 calibre Experimental Springfield rifle.

The following is a description of the more important ballistic properties of these weapons, as kindly furnished by authority of the Chief of Ordnance, U. S. Army:

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[1] Traité pratique de Chirurgie d'Armée, 1890.

[2] The United States government has, since the reading of these notes, adopted the Krag-Jorgensen rifle. The regular army and the national guard will be provided with the new armament in the course of one or two years.

"The Springfield rifle, which has formed the armament of our foot troops since 1874, is a 0.45 calibre gun, the projectile of which has an initial velocity of 1301 f. s. Its projectile is made of compressed lead, cylindro-conoidal, cannelured and lubricated; weighing 500 grains; impelled by 70 grains of black rifle powder.

"The Experimental Springfield rifle is a 0.30 calibre gun, the projectile of which has an initial velocity of 2000 f. s. Its projectile weighs 220 grains, is made of a German-silver jacket filled with a lead core, and it is neither cannelured nor lubricated. It is impelled by 36 grains of smokeless powder.

"The velocity and energy of the projectiles of the two weapons at different ranges are as follows:

Velocities of the Projectiles of the Two Guns.

Name and calibre of weapon.	Initial velocity. f. s.	500 yds.	1000 yds.	1500 yds.	2000 yds.
Springfield, calibre 0.45	1301	873	676	531	429
Experimental Springfield, calibre 0.30 . . .	2000	1103	804	627	495

Energy of the Projectiles in Foot-Pounds.

Name and calibre of weapon.	Initial velocity.	Weight, grains.	Muzzle.	500 yds.	1000 yds.	1500 yds.	2000 yds.
Springfield, calibre 0.45 .	1301	500	1879	846	507	313	204
Experimental Springfield, calibre 0.30	2000	220	1954	594	315	192	120

"It will be seen by the first table that the initial velocity of the small-calibre projectile is far greater than that of the large-calibre, and that the striking velocity at all the ranges is greater.

"The penetrations of bullets are proportional to the squares of their striking velocities; for equal velocities the penetration is proportional to the density of section. The form of the bullet and its power to resist deformation are also concerned in the penetration."

The superiority in the motion of translation, as well as the greater striking velocity of the 0.30 calibre projectile, is due in great part to the primary impulse, which is greater, to the lengthening of the bullet, and to the reduction in diameter of the missile, which necessarily encounters less resistance.

The velocity of rotation for the Springfield rifle is about 800 turns per second, whilst the projectile of the Experimental Springfield rifle describes as many as 2000 turns in the same space of time. This velocity of rotation is sustained, as a rule, without sensible loss at all the ranges, and it exercises a great influence upon the flight of the missile and the correctness of fire.

Having been ordered by the Secretary of War, July 20, 1892, to conduct certain experiments with the projectile of the Experimental Springfield rifle which would show the destructive effects of this missile upon the human body, I proceeded to Frankford Arsenal, the place designated for the experimental work. Through the kind offices of one of your officers I was enabled to obtain ten cadavers, which were delivered at the Arsenal from time to time, and with the able co-operation of the commanding officer at Frankford Arsenal and his very obliging assistants, I commenced the work of shooting on the 10th day of January, 1893, and fired the last shot on the 25th day of March.

Having been designated by the Secretary of War, about two years ago, to preside over the Medical Section of the War Department's exhibits at the World's Columbian Exposition, I conceived the idea at the onset of the work at Frankford Arsenal of preserving the specimens of bone lesions and the missiles producing them, as a collection to be exhibited among the articles to be displayed from the Army Medical Museum.[1] For their preparation the credit is due to the Curator of your Museum, Dr. Guy Hinsdale. Aside from the tedious work of preparing and mounting each specimen, I am deeply indebted to him for invaluable assistance in securing accurate information of the destructive effects by the missiles, especially in the bony structures.

I am also indebted to Lieutenant J. Walker Benet, Ordnance Department, U. S. Army, who had charge of the ballistics during all the work.

Barrels filled with sawdust were placed behind the cadaver experimented with to catch the bullets and preserve them from deformation other than that received in their passage through the body. Each bullet was marked on its base with a number or letter for the purpose of identification, and after firing at each range the bullets were collected.

In order to make the destructive effects of the small-bore projectile apparent, I followed the plan of,—

1. Noting the effects of the projectile of the 0.45 calibre Springfield rifle upon different parts of the human body at various ranges.

2. Noting the effects of the projectile of the 0.30 calibre Experimental Springfield rifle upon similar parts of the human body, or parts offering about the same resistance, at similar ranges.

Impact.—The shock, as shown by the oscillation of the limb, when a resistant bone was hit was always greater with the leaden bullet of 0.45 calibre than with that of the smaller-bore gun; on the other hand, the difference was reduced to a minimum when the soft parts alone were hit. It often happened that the occurrence of a fracture by the smaller projectile was determined only after a careful examination of the wound. This differ-

[1] The specimens formed a prominent feature in the exhibit at the World's Columbian Exposition.

ence in shock was noted at all the ranges, but especially so after the 500-yards range.

The minimum amount of shock for the smaller projectile depends upon its superior penetration, which, as stated already, is due to its smaller calibre, greater velocity, and last, but not least, to the fact that it preserves its shape unaltered. The fact that the calibre alone of the 0.45 calibre Springfield was greater would be cause sufficient for a greater amount of shock upon impact; since, however, deformation is the first thing that happens when the leaden bullet collides with a resistant bone, part of the energy is consumed in the flattening and the rest is conveyed to the part struck in the form of shock. The difference in the amount of shock is at once suggested in Table No. 2, already cited. It will be seen that the work in foot-pounds for all the ranges is greater with the projectile of the 0.45 calibre Springfield rifle. Delorme and Chavasse, who have experimented a great deal with the 8 mm. gun of the French army, while commenting upon similar experience, express the opinion that the general as well as the local shock will be less with the new projectiles having metallic mantles.

Explosive Effects.—The explosive effects caused by the projectile of the Springfield rifle were noticed up to 200, and in some instances to 250 yards, whilst the explosive effects of the projectile of the Experimental Springfield rifle extended in some instances as far as the 350-yards range.

The term "explosive effects" is somewhat confusing, as it is apt to convey the idea that the wound was caused by an explosive bullet. It is a term that doubtless owes its origin to the similarity in appearance of the two wounds. When we say that a wound shows explosive effects we mean that it appears as though it had been caused by an explosive bullet. There are no special features, as a rule, to describe about the wound of entrance, except the appearance at times of bony sand in the track leading to a fractured bone. When a resistant bone has been hit, the foyer of fracture will show great loss of substance, the bone will have been very finely comminuted, the pulverized bone will have been driven not only in the direction in which the projectile was travelling but in all directions, and the pulpification of the soft parts will not be limited to the track of the bullet, but the utter destruction is noticed extending some distance into the tissues. The wound of exit appears like a bursting forth of the skin; the track leading to the bone is funnel-shaped, the base corresponding to the wound of exit in the skin and the apex to the seat of fracture.

The degree of explosive effects corresponds to the velocity of the projectile at the moment of impact and the resistance offered by the part hit.

The bony structures are not alone in showing explosive effects with high velocities. Dr. Johann Habart, the German military surgeon already referred to, found explosive effects with the projectile of the new Mauser, up to 500 m., in "very vascular tissues, cavities filled with liquid or semi-liquid or viscous masses, such as the skull, heart, liver, spleen, kidneys,

stomach, intestines, and bladder, which have been attributed by some observers to hydraulic pressure."

In order to test the influence of hydraulic pressure in causing explosive effects, some interesting experiments were conducted at Frankford Arsenal:

1. Empty powder-cans were fired into at various ranges. The orifices of entrance and exit were found proportional to the size of the projectiles employed. The cans were not deformed and showed no explosive effects.

2. A half-dozen or more powder-cans from the same lot were filled with wet sawdust. The cans were fired into at various ranges. The orifice of entrance in each case presented no special features. The orifice of exit, however, for each projectile was marked by a bursting forth of the tin and loss of the contents. The cans had expanded as if by an internal force which had been exerted in all directions. The explosive effects were about the same for both bullets.

3. Another lot of powder-cans of the same size and dimensions were filled with water and fired into. The results were quite similar to those found with the wet sawdust, only more extensive, and they were about equal for the two projectiles.

The experience gained by shooting into cadavers at Frankford Arsenal confirms the observations of other investigators in that explosive effects were *nil* when muscular tissue alone was traversed by either bullet.

The following results were noted with the two projectiles at similar ranges, but beyond 350 yards.

It was necessary to go beyond the latter range to avoid explosive effects, which, as already stated, are often noticed with the projectile of the Experimental Springfield rifle at this range.

Soft Parts.—The wound of entrance corresponds in diameter, as a rule, to the diameter of the projectile. In the middle and remote ranges the entrance wound measured less at times than the diameter of the projectile, but the difference was only apparent, since the wound invariably admitted a projectile of like calibre to the one having inflicted it. In the short ranges it was often noted that skin overlying bone and resistant aponeurosis was apt to show a wound of entrance actually exceeding in diameter that of the missile. The edges of the wound of entrance were at times clear-cut, but more often they were rolled in, and oftener blackened for a distance of a line about the circumference. The latter circumstance gave rise to the notion formerly that the discoloration was due to burning, but from experiments conducted by Beck, also by myself, to be cited later, this fallacy has been forever set at rest.

The wound of exit of the 0.30 calibre rifle was generally larger than the wound of entrance, generally round, marked at times by a mere slit; again it was star-shaped, T-shaped, semicircular, etc.; the edges were usually turned out. When a wound of exit exceeded in diameter that of the pro-

jectile to any extent, the circumstance was generally regarded as indicative of bone lesion.

Effects upon Diaphyses of Long Bones.—Up to 350 yards the destructive effects of the two projectiles are alike severe. Unless guided by the wound of entrance or other circumstances it is difficult within this range to determine by the appearance of the injury alone which of the projectiles may have caused it. After this range the destructive effects of the smaller projectile become less than those of the larger missile. The fissuring is less, the spiculæ of bone are larger, and they are more apt to be attached to the periosteum. These differences are especially noticeable from the 500 to the 1500 yards ranges. At 2000 yards the small bullet again shows rather extensive comminution. This fact has been noted by all observers, and it has been variously explained, though not in a very satisfactory manner. It has been said that the projectile has lost so much of its velocity of translation when it reaches this part of its course that it is apt to lodge, and that the velocity of rotation causes such a disturbance when it is about to engage, that comminution is the result. The angle of impact, which is rarely perpendicular at this range, has been brought forth as a possible cause. Certain it is that a number of the projectiles were observed at this range by us to impinge "side on" at the moment of impact. Whether this circumstance is more apt to occur with reduced charges than we would expect to find in the natural condition is a mooted question.

Effects upon Joints.—Before engaging upon this part of the subject I wish to preface my remarks by stating that the humane wound of the small-bore gun is especially observed in the joints and soft parts. Owing to the reduction in calibre, the wounds in the latter partake more of the nature of subcutaneous wounds, and experience shows that they heal very kindly under appropriate treatment.

It is not necessary in this instance to dwell especially upon the destructive effects of the larger leaden projectile upon joints. Suffice it to say that the greater frontage, which it naturally possesses, is made greater still by deformation, and that these facts, with velocity sufficient to penetrate a joint, serve to convert the 0.45 calibre projectile into a very destructive missile. The following cases noted at Frankford Arsenal will explain the marked difference in destructive effects by the two projectiles upon the spongy ends of bones:

Case I.—Gunshot injury of the lower part of the left femur; bullet marked No. 4; calibre, 0.45; impressed by the velocity common at 100 yards; soft parts frozen. The wound of entrance is marked by a V-shaped tear, each side of the V being 2.5 inches in length; the wound of exit is round, 1.5 inches in diameter. It is funnel-shaped, the base of the funnel corresponding to the skin, and the apex to the point of destruction in the bone. The soft parts adjacent to the track of the bullet are a pulpified mass mixed with finely pulverized bone. One and one-half inches of the external half of the shaft immediately above the articular surface have been carried away; the remaining part of the shaft is separated from the articular surface by a

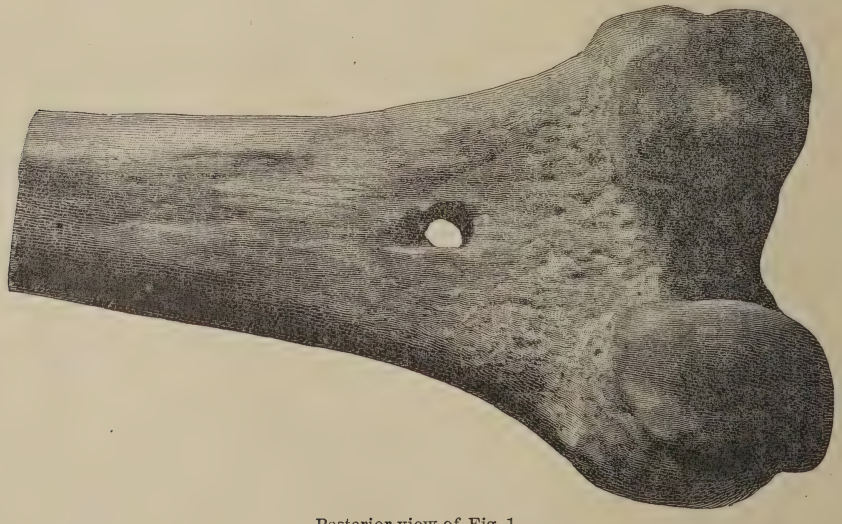
transverse fissure, whilst an oblique fissure extends into the shaft above, 2.5 inches in length. The upper and external quadrant of the patella was chipped. There was no fissuring into the joint. The projectile was not recovered.

FIG. 1.



Gunshot injury of the lower third, right femur, by the .'30 calibre German-silver jacketed projectile with the velocity common at 1200 yards. The projectile perforated the anterior face of the bone about its middle, immediately above the upper margin of the articular surface, making a clean-cut perforation. The fissure occurred in drying; it was not present in the recent state. Range, 1200 yards; bullet, "D"; calibre, 30.

FIG. 2.



Posterior view of Fig. 1.

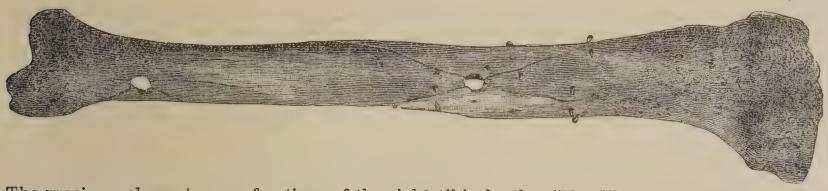
CASE II.—Gunshot injury of the lower end of the right femur; bullet marked No. 3; calibre, 0.30; impressed by the velocity possessed at 100 yards. The soft parts were frozen, on account of which the explosive effects were enormous. The projectile entered the femur just above the epiphyseal junction of the internal condyle and emerged posteriorly in a horizontal line, making an orifice the diameter of the projectile upon entering and five lines in diameter upon leaving the bone. The

perforation is well marked. The track of the bullet in the bone and between the latter and the wound of exit is lined by bony sand. There is a fissure scarcely visible to the naked eye, running downward and from before backward through the articular surface, separating the two condyles almost equally. There is also a subperiosteal fissure, 1.5 inches long, running upward from the point of emergence in the bone; there are a few small splinters of bone near the wound of exit still attached to the periosteum. The projectile was not deformed.

That we should find a perforation so well marked in the spongy end of a bone within the range of explosive effects makes the latter case very remarkable. As it is the only recorded instance of a perforation by the small metallic-jacketed bullet within the explosive zone it is but natural to infer that the frozen condition of the soft parts contributed to the result.

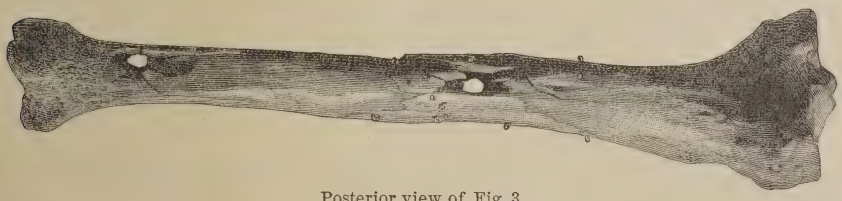
The two following injuries illustrate the difference in destructive effects upon the spongy ends of bones entering into the formation of the knee-joint, at 350 yards.

FIG. 3.



The specimen shows two perforations of the right tibia by the .″30 calibre German-silver jacketed projectile with the velocity usually possessed at 1200 yards. The perforation in the middle of the shaft shows two fissures crossing each other in the form of an "X." There is a complete fracture. The lower perforation is attended with less fissuring. There is no solution of continuity. Range, 1200 yards; bullet, "H"; calibre, 30.

FIG. 4.



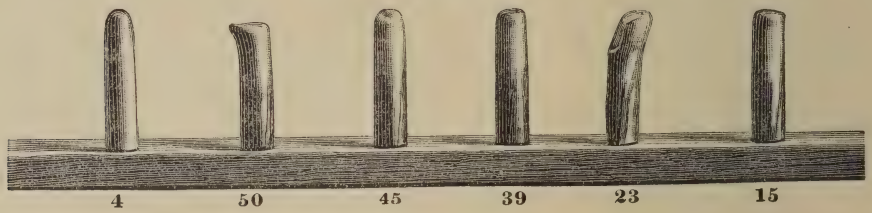
Posterior view of Fig. 3.

CASE III.—Gunshot injury of the left tibia and fibula near the knee-joint; bullet marked No. 5; calibre, 0.30; impressed by the velocity possessed at 350 yards. The wound of entrance is round, of the diameter of the projectile; the wound of exit is marked by a longitudinal slit measuring one-third of an inch. The projectile entered the anterior portion of the head of the tibia, one-third of an inch from the articular surface, in the middle line; passing obliquely towards the outer side it emerged from the posterior surface of the head of the fibula. The orifice of entrance in the bone is equivalent in diameter to the diameter of the projectile; the orifice of exit is irregular, and one-third of an inch in its greatest diameter. There is no comminution. The knee-joint was not perforated, but the articular surface adjacent to the tuberosity shows a fissure which was not apparent in the recent state. The projectile was lost.

CASE IV.—Gunshot injury of the lower shaft of the right femur; bullet marked No. 3; calibre, 0.45; impressed by the velocity common at 350 yards. The wound of entrance is 1.5 inches above the outer condyle, round, and equals in diameter the diameter of the projectile. The wound of exit is in the upper part of the popliteal space, irregularly quadrilateral in shape, three-fourths of an inch in its greatest diameter. The bullet entered the lower shaft, 1.5 inches above the margin of the

articular surface, one-third of an inch outside the median line. Nine large splinters are detached measuring from 3 to 5 inches in length. There are a number of deep vertical fissures in the upper and lower fragments; those in the latter do not invade the joint. The projectile was very much set up.

FIG. 5.



Specimens showing the more common deformations of the .″30 calibre German-silver jacketed projectile:

No. 4. This is a normal .″30 calibre German-silver jacketed projectile which was never fired.

No. 50. A .″30 calibre German-silver jacketed projectile after inflicting a comminuted fracture of the tibia and fibula with the velocity common at 150 yards.

No. 45. A .″30 calibre German-silver jacketed projectile which caused perforation of the astragalus with the velocity usual at 350 yards.

No. 39. A .″30 calibre German-silver mantle projectile which inflicted a perforation of the surgical neck of the humerus with little comminution with the velocity common at 350 yards.

No. 23. A .″30 calibre German-silver jacketed projectile after inflicting a perforation with slight fissuring of the middle of the shaft of the tibia, when propelled with the velocity usual at 1200 yards.

No. 15. A .″30 calibre German-silver jacketed projectile after inflicting a complete fracture with extensive fissures of the middle of the shaft of the femur, while possessed with the velocity usual at 1500 yards.

The tendency on the part of the smaller jacketed bullet to perforate the spongy ends of bones increases as the velocity diminishes. After the 500-yards range, perforations of these structures are rather the rule than the exception.

Figs. 1 and 2 substantiate this statement, while an exception is seen in Figs. 3 and 4; the illustrations explain themselves so clearly that a recital of Cases V. and VI. is not deemed necessary.

We made no notes of injury to blood-vessels. Habart, who mentions some observations in this line, states, with reference to the effects of the 0.30 calibre on the vessels, that the "blood-vessels are seldom torn, and that they are not closed so easily by coagulation as those severed by leaden projectiles. The latter are more apt to lacerate and bruise the blood-vessels, facilitating thereby the formation of thrombi. On account of the small aperture in the skin and soft parts in the wounds of the jacketed projectiles, the wounds bleed generally less than those made by the soft leaden bullets; the hemorrhage is easily stopped by coagulation, which forms a spontaneous cure under a blood scab."

Deformation of Projectiles.—The deformations of projectiles which accompany the majority of the specimens represent nearly every form of alteration known. Those of the leaden projectiles are sufficiently familiar and require no comment. The deformation of the jacketed projectile is most common at the conical end, consisting usually in a slight dent or flattening or partial separation of the metallic mantle from the leaden nucleus; complete separation between the jacket and nucleus is a very rare

occurrence. It occurs principally with high velocities at close range, when the projectile encounters resistant bone. (See Fig. 5.)

The Heat Imparted to Projectiles.—The heat imparted to a projectile by the ignition of the powder, the resistance in the barrel, etc., has been very much exaggerated. Some have gone so far as to claim that the small jacketed bullets are rendered aseptic thereby. In a series of experiments conducted at the Pathological Laboratory of the Johns Hopkins University and Hospital, also at Frankford Arsenal, I was able to show that this claim is false. Animals shot with jacketed projectiles previously infected with anthrax bacilli almost invariably died of anthrax. In one instance erysipelas was communicated to a rabbit by shooting him with a 0.45 calibre leaden projectile from a Colt's revolver, the projectile having been previously infected with the streptococcus of erysipelas.

THREE TYPES OF RENAL DISEASE.

BY A. E. AUSTIN, A.B., M.D.,
Professor of Medical Chemistry at the Tuft's College Medical School.

WHILE recognizing that the cases on which this article is based present nothing new, yet I think they direct attention to certain features with which it is well for us to become familiar, especially since no matter how ingeniously we arrange a classification of diseases we always find some forms which depart from such artificial divisions.

CASE I.—Mrs. O., fifty-nine years of age, a woman previously healthy as far as known and the mother of five children, ate a hearty dinner after doing some housework in the forenoon of an extremely hot day, and went in town shopping; before finishing she became exceedingly ill, but returned to her home unaided.

I first saw her at 7 P.M. June 1, and found her complaining of a violent headache, and vomiting the contents of the stomach, and also bile. The carotids were throbbing wildly; the pupils were contracted and sluggish; skin hot and dry; tongue red and parched. The temperature was 103° F., the pulse was 100, full and tense. The woman was very restless, tossing from side to side, complaining bitterly of the pain in her head, and occasionally getting up and walking the floor. She passed water once during the night, how much I do not know, but the amount reported to have been passed was copious. There was constipation, restlessness, which gradually changed to deep coma, with snoring respiration; there was neither œdema nor convulsion.

Some of the urine, of which there was a pint drawn with a catheter, showed the following conditions: color high; albumen one-half to one per cent.; sp. gr. 1010; urea, seven-tenths of one per cent. The sediment showed hyaline and granular casts, coarse and colored, of large diameter, occasional waxy casts, fatty casts, free fat and blood, no epithelial elements.

By purging, the woman was aroused from her stupor on the second day (June 2), but again passed to a state of extreme restlessness, being at times delirious.

The amount of urine remained at about two pints per day, but the urea continued low. On the second day the temperature became subnormal, the skin was covered with a cold clammy perspiration, the tongue was coated and dry, there was extreme thirst, the face was dusky. The pulse was 120, compressible and weak. The vomiting ceased, and the bowels moved five times during the day. There was no complaint of headache, even during conscious moments. Her sight and hearing were very much impaired, as shown by her asking for lights in the daytime and for her daughters who were both present. Everything was swallowed with avidity, and three pints of milk a day were taken. Matters remained thus until the night of June 4, when the woman died, after eight hours of complete stupor, from which she could not be aroused.

The interesting features about this case are the suddenness with which the disease appeared, the utter absence of preliminary symptoms, though this was an undoubted case of chronic parenchymatous nephritis, which is almost invariably accompanied by œdema, of which here there was no trace whatever. The comparatively large amount of urine, and the absence of convulsions, too, are features which are rather unusual. The large size of the casts, the absence of epithelial elements and abundance of fat all go to show the case to have been one of long standing.

Case II.—G. A., a young man of good family history, the father and mother both being alive, had syphilis, with initial sores, eruption, and mucous patches in throat. He underwent treatment for three years and supposed himself cured. About three years ago he began to have pain in back with limited movement of spine, and was placed in a back-brace for what was diagnosed as caries of spine. He also had a hernia on left side. About eighteen months ago attention was called to œdema of the ankles, and the patient was obliged to get up at night in order to pass water, which was always pale and of large amount. Headache was also experienced about this time with a good deal of indigestion. Three months ago, after a bath, the man became unconscious, and had several uræmic convulsions; since then he has had a persistent diarrhœa of from three to five movements daily, and has slept badly. Upon examination, we found a man extremely pale, of a chalky-white color, his lips were pale and bloodless, his eyes were bright, his face was somewhat œdematous, tongue was red and raw-looking. There was no temperature, pulse was 108, weak and compressible, respirations were 30. The heart-sounds were distinct but valvular in quality. There were no murmurs and no friction-sounds; cardiac area was not increased, and the apex was in the fifth interspace. The left front of the chest had increased breath-sounds, and the lower front and back moist râles; the right upper front and back had vesiculo-bronchial respiration; the right lower front and back had dulness with absence of breath-sounds, and there was bulging of the intercostal spaces in this region, which may have been due to œdema. The abdomen was protuberant and the navel protruded; the flanks were uniformly enlarged and there was an impulse-wave across the abdomen on tapping either flank. Everywhere resonance was flat on percussion to just above the navel. Legs were œdematous and pitted on pressure. Diarrhœa continued, and there was headache, indigestion, slight dyspnœa, occasional cough but no expectoration.

In regard to urine, the conditions varied so that I will give the record of examination of three periods:

October 20, amount was 1700 c.c.; sp. gr. 1024; albumen, 2 per cent.; urea, 18.5 grammes in twenty-four hours; sodium chloride, 11.39 grammes; sediment slight, consisting chiefly in fatty casts of small diameter, compound granular cells, and a few

normal blood-disks. November 2, the amount had diminished to 1280 c.c.; albumen was 1.2 per cent. and urea 8.58 grammes in twenty-four hours. November 23, the amount of urine was 670 c.c.; albumen, four per cent.; urea, 9 grammes in twenty-four hours; sodium chloride, 4.136 grammes. December 1, patient began to be troubled with dyspnœa amounting at times to orthopnœa. Both chests were dull, front and back, behind to angle of scapula; heart-sounds were dull and muffled, cardiac area was increased, and apex-beat was in the fourth interspace, in line of the nipple on the left side. Pulse was 120, weak and thready. Intractable vomiting began and coma followed; the man died at twelve, midnight.

We have here an undoubted causation in syphilis, and there existed a probable interstitial or amyloid disease antedating and associated with the parenchymatous changes of the kidney. This is proved, I think, by the long continuance of the disease, and the small calibre of the casts, which shows a previous narrowing of the renal tubules. It is a surprising fact, with the limited amount of urea excreted, uræmic symptoms did not occur earlier in the later stages of the disease, which may be perhaps accounted for by the persistence of the diarrhœa, a ready means, as we know, of vicarious elimination of urea.

Case III.—Seen in consultation with Dr. J. W. Heath. A woman at full term was in labor. After three convulsions she was delivered by forceps, following which there was one convulsion. There was great restlessness, no vomiting, but severe headache, tenderness over the abdomen, and she was blind for one day. At the end of eight days she was found with a temperature of 99.2° F., her pulse was 88, full and tense, with throbbing of carotids, respirations were 12 and snoring. The woman was pale, and there was slight œdema of face. The pupils were contracted and sluggish; there was some stupor, alternating with muttering delirium. There was no suppression of milk; no suppression or odor of lochia; there were no chills.

The urine was of a high color, slightly acid; sp. gr. was 1015; albumen, 1.2 per cent.; urea, 1.5 per cent.; sodium chloride, .4 of 1 per cent. The sediment contained blood-corpuscles, renal cells in large numbers, epithelial casts, occasional fat globules, granular casts, crystals of uric acid and of oxalate of calcium. December 31: pulse was 100 and soft, respirations were 24 and quiet, no snoring; pupils were dilated; there was some muttering; and there were six involuntary dejections during twenty-four hours. At this time she was taking food well and was less restless. January 2: pulse was 100, full and of good volume; temperature was 100.6° F.; patient was perfectly rational; had a slight cough; respiration was regular and easy; she had some pain back of eyes; œdema was disappearing; there was no headache, pupils were normal, she was taking food well, some noisy delirium at night. Patient fully recovered.

In connection with this case, which is one of simple acute nephritis, comes up the often-asked question, "What is the cause of puerperal convulsions?" I think we may well consider uræmia as the cause in this case, though the urea is but slightly decreased, yet the amount failing of excretion must be slowly accumulating in the blood and tissues. Moreover, whether we regard urea, kreatinin, or ammonia as the toxic principle arousing these frightful nerve-storms, yet we must acknowledge that this poisoning proceeds *pari passu* with the steadily diminishing amount of urea in the urine.

We may well ask ourselves, What shall be the danger-signal in this con-

dition, the beacon which shall warn us of the near approach of the dangerous shoal of uræmic intoxication? In this case no warning was given and the first intimation was a full-fledged convulsion. It emphasizes, however, the importance of closely watching the urine of pregnant women during the last few months, in order that we may at once note any departure from the normal in amount, specific gravity, or urea.

OCULAR DISTURBANCE DUE TO CLIMATIC INFLUENCE.[1]

BY S. D. RISLEY, A.M., M.D.,

Attending Surgeon, Wills Eye Hospital; Lecturer on Ophthalmology in the University of Pennsylvania; and Professor of Ophthalmology in the Philadelphia Polyclinic and College for Graduates in Medecine.

When your President honored me with an invitation to present a paper upon ocular disturbance due to climatic influence I hesitated, because I was not a member of your society, and also for the reason that I have had a limited opportunity to study eye-diseases outside of the environments of our Eastern seaboard.

It is very difficult to differentiate between climatic influence and racial peculiarities, on the one hand, and the peculiarities of immediate environment, on the other. For example, a study of hospital statistics and clinical reports made by ophthalmic surgeons in Europe and in different sections of our own country reveals the fact that certain forms of conjunctival and corneal diseases are much more prevalent in some sections than in others. In the clinics of Europe, cases of trachoma, *e.g.*, are very much more numerous than in Philadelphia, and during a recent visit to the northwestern section of the United States I was much impressed by the relatively large number of patients under treatment by my friends in that section for this rebellious form of conjunctival disease. They were disposed to account for the fact by the high winds carrying clouds of dust, by the exposure in agricultural communities to the strong light in the harvest-field for many hours daily, and the cold winds and strong snow-light through the long and severe winter.

Your President, Dr. Curtin, has pointed out in an admirable manner in a paper presented to this society, in 1886, on Rocky Mountain fever, the deleterious influences of the alkali plains on other mucous membranes. The irritating alkaline dust is doubtless the cause also of chronic inflammation of the conjunctiva and cornea as well as of the upper air-passages. The so-called Egyptian ophthalmia is the same form of disease.

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[1] Read before the American Climatological Association, May, 1893.

Of late years we have come to recognize another form of ocular disturbance, due to climate influence, viz., the malarial affections of the eye, of which I have seen many examples. They consist in affections of the conjunctiva, cornea, and deeper tunics. I published a group of these cases in the *Therapeutic Gazette* for February, 1892, in a paper on "Ocular Manifestations in General Disease." The most frequent malarial disturbance has been affections of the cornea which do not conform accurately to other recognized forms of corneal disease, are periodical in character, and recover under antiperiodic doses of quinine or arsenic. The periodicity consists, when of the tertian type, in the eye being much worse on the day on which the paroxysm occurs. Since there is ordinarily actual tissue-change, usually superficial ulceration, or abrasion of the corneal epithelium, the eye is never well, as there is not time for repair between the acute exacerbations.

When the cause is discovered, it is gratifying to see the rapid recovery made under large doses of quinine. Another type I have occasionally seen is where recurring attacks of corneal disease have appeared on the fourteenth, twenty-first, or twenty-eighth days in patients living in districts well-known as malarial. I have also seen cases of recurring retinal hemorrhage in which the attacks came approximately on multiples of seven days. In one of these cases, the presence of the corpuscles of Laveran were demonstrated. These two cases are comprised in the published group already mentioned. Many others have pointed out the influence of malaria in causing ocular disease. It is, therefore, quite certain that malarial climates are fraught with danger to the integrity of vision, not only indirectly through the general impairment of health, but directly, as in the occurrence of intraocular hemorrhages during the cold stage of the paroxysm.

There are also forms of rheumatic eye-disease which, if not directly produced by the climate, are certainly very much aggravated by living in cold, moist districts. I have patients subject to recurrent rheumatic iritis who are comparatively free from both their rheumatism and iritic attacks during the summer season at home or while spending their winters in Florida. What effect the dry and equable climate of Colorado in the region of Denver and Colorado Springs may have upon this class of cases is an interesting inquiry.

During a recent visit to the higher altitudes of Colorado, I was much impressed by the annoying symptoms I experienced. The mucous membrane lining the upper air-passages became turgid, and so swollen as to quite close the nostrils, the voice became dull and hoarse, there was marked tinnitus and some dulness of hearing. The conjunctiva was congested, and there was a deep-seated post-ocular pain. I cannot but think that prolonged subjection to such disturbance must favor the occurrence of chronic hyperæmia and inflammation of the ocular and nasal mucous membranes.

In patients suffering from sclerosis of the arterial tree, particularly in the early stage, when the arterial walls have not yet been reinforced by

connective tissue in the intima, the results might be anticipated with some dread that intraocular or even intracranial apoplexies should occur. I have been much interested in the papers presented to the society by Dr. Frank Donaldson in 1887, on the "Causes of Cardiac Failure in High Altitudes," and by Dr. J. T. Eskridge on "Nervo-Vascular Disturbance in unacclimated Persons in Colorado."

My interest in the possible influence of high altitudes over vision was greatly enhanced by a case brought to me from Colorado Springs in May, 1891. The history I have deemed of sufficient interest to present for your consideration. I do so in the hope that it may elicit some expression of opinion upon the part of those living and practising in that section.

Jane Smith, aged twenty-eight, house-servant, was brought to me May 12, 1891, by her employer, who, fearing her trusted servant was to lose her eye-sight, travelled with her from Colorado Springs to Philadelphia, and handed me the following interesting letter from her physician, Dr. J. R. Robinson, of Colorado Springs:

"Colorado Springs, Col., May 8, 1891.

"Dear Doctor,—Mrs. Jane Smith consulted me on March 14, on account of failing vision of the left eye, which she first noticed a few days previous to that time. Her vision was, O.D. $\frac{20}{20}$, O.S. $\frac{20}{40}$. During the examination vision seemed to vary in the left eye, dropping as low as $\frac{20}{70}$ for a moment and again rising to $\frac{20}{40}$. The only history elicited was pain in the left temple and orbit for a few days, but of moderate degree. The only change I could find in the fundus was a decided enlargement of the inferior branch of the central vein. The following day a like change was noted in the upper branch, and the vision had fallen to bare light-perception.

"On March 17, there was total blindness, the lower vein was somewhat shrunken and I could find no trace of the arteries of the disk. I could detect no haziness of the retina, in fact, no changes except as above noted.

"On March 19, there was no change in the fundus, but there was a little return of vision in the left field,—the movement of my hand could be distinguished here at a few inches.

"I saw the case no more until May 1. She could then count fingers at three feet with the left eye. The circulation was re-established, but there seemed to me to be beginning atrophy of the optic nerve. The right eye was normal.

"On May 2, the patient complained of failing vision of the right eye, V = $\frac{20}{200}$. I could detect no change in the fundus to account for it.

"May 4: claims she can barely see people crossing the room, but counts fingers at six feet. I called in Dr. S. W. Morrison, who had confirmed what I have described as having found in the left eye, but he could find nothing abnormal in the right. The fundus seemed to us both to be normal. I have not seen the case since, but I am very much interested to know what you think of it.

"As to my diagnosis, I inclined to embolism of the central artery in the left eye, although many of the symptoms usually found were absent. I confess that I am now unable to make a positive diagnosis. There is much in the case to suggest hysteria, but some change may have occurred by the time the patient reaches you to make the diagnosis clearer. My treatment was expectant at first, later strychnine and galvanism for left eye. Have given her no specific treatment, as I could elicit no history of specific trouble."

When Dr. Robinson saw her last, on May 4, vision had sunk in the right eye to "counting fingers at six feet." The left was quite blind, there being only quantita-

tive perception of light, and that in the temporal field only. On May 12, after her long journey to the East, I made the following record: O.D. V = $\frac{5}{200}$, O.S. V = $\frac{3}{200}$, but acuity is variable, for an instant able to see smaller letters, and a moment later cannot distinguish any object. The most careful study discovered no general cause for her eye-symptoms. She had had severe trouble with her teeth, accompanied by severe headache just prior to the onset of the ocular symptoms, but her dentist, Dr. H. L. Gilmour, who examined her teeth once more at my request, reported her denture in good condition and nothing in the mouth to cause reflex symptoms.

There was now no headache or vertigo. She slept and ate well. The patellar tendon reflexes were exaggerated. The pupils were too large but equal, and react both to light and in accommodation. She had the stare so characteristic of the person blind from atrophy. Her general appearance and movements were those of a blind person. She was listless, sluggish in all her movements, and indifferent as to her future.

O.D. field for form normal, also normal for red at first, which then fades out and she is unable to recognize any of the colors. My note is unfortunately silent as to any change of the form field after the loss of color-perception, but at no time did it show any tendency to spiral contraction. The optic nerve at the outer half was gray-green with sharp margin and devoid of blood-vessels. Inner half is still capillary but grayish. No notable change in the large vessels.

O.S. field for form normal, but lost for red, except for a small area in nasal field. Optic disk is greenish-white throughout, entirely devoid of capillaries. Central arteries and small veins normal or possibly too full. In a word, the left optic disk presented a typical picture of rapidly-progressing atrophy. At her first visit a grave prognosis was given but no treatment advised. She was sent to the dentist for an examination of the teeth and a specimen of urine requested. The following day, May 31, she reported with a note from the dentist as given above, and result of examination of urine was negative. She thought her vision was better and examination showed V = $\frac{10}{200}$ in each eye, a marked increase. In all other respects her condition remained the same.

She then received the quadruple chlorides internally and a weak collyrium of eserine to be used morning and evening.

On May 16, V = O.D. $\frac{15}{200}$; O.S. $\frac{5}{200}$. Strychnine sulphate gr. $\frac{1}{30}$ t. d. was added to the dose contained in the chloride mixture.

May 26, after ten days at the sea-shore, reports her vision greatly improved. There was a well-marked diminution in the general dulness, and she moved about with more alacrity. O.D. V = $\frac{20}{200}$ readily. Field for form, blue and green normal, but red is seen with some uncertainty in any part of the field, and not at all at point of fixation,—*i.e.*, central scotoma for red. O.S. now shows concentric narrowing of the form-field, and blind for all colors. Strychnine increased to gr. $\frac{1}{16}$.

June 9, 1891, the ophthalmoscope now shows a well-marked improvement in the color of the right disk; V = $\frac{20}{40}$. On the left side, however, there was an apparent diminution in the calibre of the central vessels, and the atrophy seemed progressive. Notwithstanding these ophthalmoscopic changes vision had risen to $\frac{15}{200}$.

On June 23, she returned with vision in O.D. down to $\frac{2}{200}$, but curiously enough had slightly improved in O.S. to $\frac{20}{128}$. She related that on the 20th she had noticed "numb" feeling in her right arm which would "come and go," and had woke in the morning with a severe frontal headache, worse on right side. While at the office there was no loss of sensation, and the tendon reflexes were markedly exaggerated. Right pupil larger than the left, but both react with light and to accommodation. Central scotoma for all colors with each eye, but a small white spot one millimetre in diameter was seen with difficulty at fixation-point, now and then being lost to perception. She was just on the eve of her menstrual flux. All medicine was stopped, and ascending doses of potassium iodide ordered to be commenced after the menstrual period. She herself thought her vision would be better after the flow had

commenced, and inquiry elicited the fact that her vision had been more impaired for two or three days during her menstrual period since the onset of the ocular trouble, but not before.

On July 7, V = O.D. $\frac{20}{40}$; outer half of N. green.
O.S. $\frac{20}{50}$; N. green throughout, vessels small.

On September 22, O.D. V = $\frac{6}{7.5}$; no change in ophthalmoscopic picture.
O.S. V = $\frac{6}{12}$.

On October 15, O.D. V = $\frac{6}{6}$, failing before line of letters could be finished; field normal, and scotoma for red had disappeared on both sides.
O.S. V = $\frac{6}{7.5}$; N. still green and would pass for that of an eye blind from atrophy, but the central vessels were not so small as before. Slight concentric narrowing of F., no scotoma.

It may be claimed that the treatment proved curative in this case instead of the five months spent at the level of the sea. The strychnine and potassium iodide, it is true, often seem to retard the progress of some forms of optic nerve-disease, but I have never witnessed so complete a restoration of vision in nerves with such apparently advanced atrophy as in this case, or such extraordinary return to a normal color of the optic nerves as occurred in this patient.

She returned to Colorado Springs in October, and the following March, 1892, a careful study by Dr. Robinson, which he kindly forwarded to me, revealed no tendency to a recurrence of her visual disturbance and no change in the ophthalmoscopic picture. Fields were normal for form and color.

BLOOD CHANGES RESULTING IN ANÆMIA, CHLOROSIS, GOUT, AND RHEUMATISM.

BY ROBERT BELL, M.D., F.F.P.S.G.,

Senior Physician to the Glasgow Hospital for Diseases peculiar to Women; Vice-President of the British Gynæcological Society, etc.

In the number of the *British Medical Journal* dated September 23, 1893, two very interesting papers appear upon "Chlorosis and the Causation of Anæmia," and "Blood Changes produced by Uric Acid," the former by E. Lloyd Jones, M.D., and the latter by Alexander Haig, M.A., M.D., F.R.C.P. It is unfortunate, however, that papers of this class are not read to any extent by members of the profession, at least I have not been able to come across one to whom I have spoken on the subject who has taken the trouble to master the contents of these two papers. This can readily be accounted for, I think, by the fact that the papers mentioned are not calculated to benefit the ordinary medical man, as they are entirely hypothetical and not reducible to ordinary practice.

The causation of anæmia has been a subject to which I have given considerable attention during the past sixteen years, and I must confess that I cannot follow the reasoning which the authors of the two papers I refer to employ, nor can I coincide with the conclusions at which they arrive. Dr. Jones has taken considerable trouble to note the specific gravity of the blood

in healthy and chlorotic persons. What the specific gravity can have to do with a change in the character and number of the blood-corpuscles, I am quite at a loss to comprehend, seeing that of necessity the specific gravity of this fluid must change very frequently in twenty-four hours, according to the degree of thirst that exists, the amount of fluids imbibed or excreted in diarrhœa, polyuria, etc. Anæmia and chlorosis, to my mind, are simply grades of the same disease, which disease is centred entirely in the blood-corpuscles, or perhaps it would be more correct to say, in a morbid condition of the blood, which not only destroys the healthy character, but proceeds to such an extent as to reduce the vitality, and thus cause the death, and consequently a deficiency of these highly important bodies. Naturally, therefore, the healthy color of the individual, which is dependent upon the integrity of the blood, suffers, and a pallid or greenish complexion results. This unhealthy appearance, however, is more apparent in the lips and mucous membranes than in the skin itself. In consequence of the vitiated, or might I say, the diseased condition of the blood, there is a tendency to effusion into the cellular tissue, and to bleedings from mucous surfaces; which events, I think, are due entirely to the atonic condition which the muscular apparatus (including that of the heart) has suffered from in consequence of the malnutrition of these tissues, this being due to the unhealthy condition of the blood. Gastric ulcer is likewise due to a similar cause, viz., faulty nutrition of the organ, and a tendency to venous congestion consequent upon the enfeeblement thus imparted to the heart.

Dr. Jones emphasizes the fact that we do not "meet with this combination of disorders in boys." This is perfectly true; but it must be borne in mind that boys, as a rule, are very much more attentive to the ordinary laws of health than girls, and especially is this the case with regard to the daily evacuation of the bowels. Moreover, if boys do suffer from blood contamination, it affects them somewhat in a similar way, by producing a sallow complexion, lethargy, nervous disorders which may culminate in convulsions, and attacks which closely resemble enteric fever; the latter, as a rule, being ushered in by acute feverish attacks during the night, night terrors or disturbed sleep, and a feeling of intense weariness in the morning. In other instances, tuberculosis or any other latent disease is liable to become developed, and the mortality among boys is thereby very much increased. It certainly does not affect boys in the same way as it does girls; at the same time, any observer will be able to satisfy himself that the causes which develop anæmia in girls have a most pernicious effect upon the health of boys.

The health of the blood, which really resolves itself into the health of its corpuscles, would seem to depend upon its freedom from the products of decomposition. Now, we know that decomposition cannot take place in a healthy vital fluid; the vitality of the blood must in the first instance, then, be interfered with before its physiological character can be departed from. Nay, more, I would insist that it is impossible for the blood when in a per-

fectly healthy condition,—that is to say, when uncontaminated by either poisonous matter absorbed from within the economy itself or from inhalation of fetid gases from without,—to become affected by any poison other than those which actually find their way into the stomach; and even many of the zymotic poisons, which we know to be communicated through this channel, would be aborted were the blood of the individual swallowing them free from toxic matter absorbed in the manner I have indicated. The opportunity, therefore, must be imparted to it of absorbing toxic matter, or some interference must exist which will prevent it getting rid of pathogenic material, the irritation of which will prove hurtful and dangerous to the individual. It is an indisputable fact, that were the lungs unable to discharge the carbonic acid which the venous blood is loaded with when it arrives in the capillary vessels of these organs, death from suffocation would speedily ensue; but doubtless the lungs do a great deal more than eliminate carbonic acid, as is indicated by the fetid breath of individuals who are suffering from a prolonged constipation. It is to be inferred, therefore, that when the fæces lodge for an undue length of time within the colon, the watery portion of these discharges is absorbed by the blood-vessels circulating in the neighborhood of the retained fecal matter, and imparts to the blood an unhealthy condition. This is indicated not only by the dusky appearance of the skin of such an individual, but by the lethargy, depression of spirits, and irritability of temper, accompanied by frontal headache, disagreeable taste in the morning, offensive breath, and other symptoms which a person in these circumstances invariably suffers from.

Dr. Lloyd Jones has given some prominence to the views held by Virchow and Sir Andrew Clark, which bear upon the causation of anæmia and chlorosis. Virchow found that the heart, aorta, and the larger arteries, as well as the sexual organs, were frequently imperfectly developed in fatal cases of chlorosis, and he inclined to think that such anomalies to a certain extent accounted for the disease. Now, it is needless to say that such conditions are very exceptional; at the same time, when they do exist, they go to prove that the hypothesis which I have long advanced is correct, viz., that this disease is due to a deficiency of blood-corpuscles. Whether this is dependent upon a smaller number of blood-corpuscles circulating in this particular condition of the arterial system, or whether the arterial system is reduced in calibre, both conditions amount very much to the same thing.

With regard to Sir Andrew Clark's views on the subject, it will be found that the paper which he published in the *Lancet* upon the pathogenesis of anæmia was, to a large extent, a *résumé* of a paper which I had published in the same journal some years previously, in which it had been my endeavor to demonstrate the views which I had long held upon this subject, viz., that anæmia and its further development of chlorosis are in a very large majority of cases traceable to a long-continued sluggish action

of the colon. The fæces, when this (what I would designate a paresis of that portion of the gut) exists, necessarily are retained for an undue period within this portion of the bowel, and absorption of the fluid fecal matter takes place, producing auto-intoxication. This blood-poisoning has a most pernicious effect upon all the functions of the body, consequent upon the nervous apparatus being nourished by a vitiated blood-supply. As I have before indicated, the blood-corpuscles have their vitality interfered with, and consequently perish in large numbers, thus giving rise to the pallor which is characteristic of anæmia, and also to the greenish hue which is imparted to the skin in chlorosis, this discoloration being entirely dependent upon the altered character of the blood-corpuscles that have survived. In consequence of the deterioration of the health of these bodies, what are left of them are unable to perform their proper functions, and, as a result, the oxygenation of the blood is not completely performed, which again reacts upon the nervous system. The symptoms which are always so prominent in this disease are thus easily accounted for, viz., coldness of the extremities, breathlessness on the least exertion, palpitation of the heart, frontal headaches, neuralgias, depression of spirits, irritability of temper, and liability to any latent disease. The menstrual functions are also liable to be deranged, as the healthy physiological hyperæmia of the sexual organs, which takes place at this epoch, is liable to give place to a pathological hyperæmia of other organs and membranes, such as the stomach, lung, Schneiderian membrane, bladder, etc.; and thus we have, if not complete cessation of the catamenia, a vicarious discharge, occurring from the surfaces of any of these organs.

Dr. Jones reiterates that we do not find chlorosis occurring in males. I would also remind him that we do not find menstruation occurring in the male sex. Indeed, it is not difficult to comprehend why this disease confines itself, so far as the particular development of symptoms go, to the female sex, knowing, as we do, that the nervous system of the latter is so much more finely balanced than in the former, and, also, that the vascular system is subjected to so many more vicissitudes than actually exist in the male. Considering the peculiar sensitiveness of the nervous system in females, it is only rational to conclude that they are very much more easily influenced by any toxic condition of the blood than males. In consequence of this, the nervous apparatus, upon which the various organs are dependent for the healthy performance of their functions, is more readily upset, and, consequently, their health is *pro rata* deteriorated. The same reasoning may be applied to the blood-corpuscles, which are evidently more easily influenced by toxæmia than is the case in males. Dr. Jones goes on to argue that iron cures chlorosis by its astringent action alone, which is exerted upon the vessels of the gastro-intestinal tract, evidently overlooking the fact that iron is a most important constituent of the blood. Doubtless, resuscitation of the blood-corpuscles can be accomplished without the direct aid of iron, as numerous tonics have been found very efficacious in the

treatment of anæmia and chlorosis; but it must be remembered that, while the tonic action of the drugs employed is being exerted, the blood is imbibing aliment, which is essential to its health, from other substances. But even iron will have only a temporary effect if it is not combined with some substance which will exert a laxative effect upon the colon, or if this portion of the bowel is not kept empty by means of enemata administered every twenty-four or forty-eight hours. In this way, the benefit, which, as Dr. Jones asserts, accompanies the administration of salts of potassium and magnesium along with iron, can be accounted for.

If what I have said with regard to auto-intoxication is correct, and I think I have proved this to be so in innumerable cases, then it stands to reason that, if the paresis of the colon is not removed simultaneously with the treatment by iron, the disease will soon reassert itself.

Anæmia is invariably connected with a highly sensitive condition of the vaso-motor nerves. This is evidenced by flushings, which so readily take place in anæmic girls on the slightest provocation. If the tone of the arteries and arterioles is improved, this will indicate that the condition of the blood is also improving; and, therefore, it is wrong, from my point of view, to conclude that contraction of these vessels exerts a beneficial effect, whereas their tonicity is only coincident with the removal of the unhealthy condition of the blood. If we study the subject of anæmia and chlorosis closely, we will find that girls of a nervous temperament are very much more subject to the disease than those who are not so sensitive in their natures. This goes to prove that the latter, in consequence of this, resist the disease to a much greater extent; but I must insist that this circumstance will never give immunity, if the cause which I have pointed out exists for an undue length of time.

The component parts of articles which go to make up the dietary of an individual contain all the elements which are necessary to supply the various constituents of the blood, as is evident from the rapidity with which it is recuperated after serious hemorrhages from whatever cause. If, then, in cases of anæmia or chlorosis, our attention is solely directed to the daily complete evacuation of the colon, anæmia, in the large majority of cases, would recover without the aid of any other treatment. I would not, however, aver that the recovery would be so rapid as if iron had been prescribed in addition.

At this point I would like to ask my readers if they have ever in all their experience come across a case of anæmia which was not accompanied, and had not been for a long time preceded, by habitual constipation. I would go further than this, and inquire if they have ever observed a case of acute rheumatism or gout which had been unaccompanied by a constipated condition of the bowels. Remember, I do not accept a patient's statement as altogether correct when he says that his bowels are perfectly regular because he has a daily evacuation. The physician ought to examine the stools for himself, and ascertain if they have not been retained for an undue length

of time before their evacuation. This result can be easily arrived at by observing their consistence and their homogeneous appearance. Assistance in arriving at a correct conclusion on this point may also be derived from the patient himself, who will probably inform you that, although he has a motion every day, he never experiences a complete feeling of relief, but always has a sensation as if there was something more to come. This symptom invariably points to the fact that the bowel is not completely emptied, but only to a very unsatisfactory extent. Other patients will insist that their bowels are moved every day, in fact, that they have diarrhœa, but on close investigation it will be ascertained that this so-called diarrhœa is intermittent with a period of one, two, or three days' constipation, and that when the liquid stools are evacuated there is always a desire to sit as if the bowel was not relieved. Moreover, when the desire to go to stool under such circumstances exists, the call is imperative, and will admit of no delay. Now, this diarrhœa points to the fact that there is a portion of the colon at a very short distance from the rectum which is loaded with hardened fæces, and it is the irritation of this hard scybalum which induces an irritability of the bowel, together with a certain amount of catarrh which gives fluidity to the stools; and, if these stools are examined, it will be found that they contain pieces of hardened fæces which have broken off from the scybalous mass above, and thus plainly point to the fact that there is undue retention within the colon. When such circumstances exist purgatives are not nearly so beneficial as enemata. These, however, should be continued systematically for a considerable period after all apparent source of mischief has been removed, as, in consequence of the long continuance of the impaction within the colon, the muscular coat of the bowel has become enervated and unable to act of itself. This paresis, however, can be very largely benefited by the administration of strychnine, belladonna, and aloes, given at regular intervals for a period of days or weeks, as the case may require.

Dr. Haig mentions a great many points which completely prove my case. He speaks of a lady who suffered from anæmic attacks which appeared to correspond with bilious attacks, and which he calls the uric-acid storms. Now, what is the correct definition of a bilious attack? Does it mean in every instance that the blood is surcharged with bile? Most certainly not. It simply means that the blood is charged with some toxic material, this toxic material in ninety-nine cases out of one hundred having been absorbed from the colon. Of course, the liver must sympathize with such a condition of things, but to imagine that the liver is the primary cause of so-called bilious attacks, to my mind, is the height of absurdity. If we examine the urine of a person suffering from obstinate constipation, we will find that it is charged to a large extent with uric acid. Where does this uric acid come from? Is it manufactured by the blood? or is it a chemical product resulting from the nitrogenous material absorbed from fecal matter? The latter is the view which I am strongly inclined to hold. It is all very

well to theorize with reference to its production and the source from which it is derived; but we find innumerable instances where assimilation is not complete, and yet uric acid does not exist; whereas the diseased condition of the blood which Dr. Haig designates uricacidæmia is invariably accompanied by a sluggish action of the colon. When the blood thus becomes charged with uric acid, the kidneys, as we know, endeavor to excrete this impurity, but in many instances they become so overtaxed that they are unable to do this efficiently, and rheumatism and gout are the direct results. Urates, we are well aware, are soluble in warm fluids, and this being the case they are held in solution by the blood as long as it retains its normal temperature; but we will invariably find that in the regions where rheumatism finds its habitat the vascular supply is meagre, as in the cartilages, synovial membranes, etc.,—viz., in those structures where the temperature is normally lower than elsewhere. Then again, we will find that an explosion of gout, which we believe to be due to a deposit within the affected joint, usually takes place when the normal temperature of the body is at its lowest,—viz., between three and four o'clock in the morning, and also at points furthest removed from the heart, and where the temperature of the blood is consequently lower than elsewhere. This lowness of the temperature is still further increased in such circumstances because the vascular supply is at its minimum in the tissues attacked.

Dr. Haig goes on to observe that, as a result of his experience in a large number of cases of chlorosis or anæmia in young women, there was more or less dyspepsia, or even a bilious attack, occurring especially at the menstrual periods. Now, we are perfectly aware of the fact that at the menstrual period the nervous apparatus of a woman is in a very much more sensitive condition than at any other time, and is specially liable at that period to be influenced by a toxic condition of the blood, while the dyspepsia and the so-called bilious attacks are, as I have before indicated, due to the same cause. No one could possibly enjoy good health who carries about for days together within his colon a decomposing mass which is constantly giving off fetid material to his blood, and loading the circulation with poisonous matter, in short, giving rise to blood-poisoning very much in the same way as constantly inhaling noxious gases would do. Did this absorption of toxic material not deteriorate the health of the individual, it is very possible, nay, very probable, that uric acid circulating in the blood would not produce the baneful effects which we give it credit for, but when uricacidæmia exists along with a depraved condition of the health, it is not surprising that the result is anæmia, chlorosis, rheumatism, or gout.

Dr. Haig goes on to say that uric acid taken pure by the mouth passes straight into the blood. Will it not likewise pass in a similar manner from the bowel, as doubtless it does? A great many will possibly take exception to the statements that I have made, but a careful observation of patients who are suffering from the diseases which I have just enumerated will probably make them feel inclined to change their views and adopt mine.

A CASE OF HYDRONEPHROSIS; NEPHRECTOMY; RECOVERY.[1]

BY I. S. STONE, M.D.,

Clinical Professor of Gynæcology, Georgetown University; Senior Surgeon to the Columbia Hospital for Women.

G. C., a bright and intelligent girl, sixteen years of age, was referred to me on September 1, 1893, for the treatment of an abdominal tumor, supposed to be of ovarian origin. She had not suffered previous illness which appears in any way to have influenced the growth of the tumor, and has not had pain or inconvenience since she discovered its presence nearly two years since. The lower half of her abdomen was filled by a tumor about the size of the uterus at six and one-half or seven months' gestation. The uterus could be outlined fairly well, and was not connected with the growth. The tumor was thought to have a long pedicle and to be lifted up out of the lower pelvis by reason of its size.

Dr. Montgomery, of Philadelphia, saw the case with me during the session of the Pan-American Congress and unhesitatingly endorsed the diagnosis of ovarian tumor. The patient entered the hospital on the 11th of September, and as her period for menstruation was at hand, operation was deferred until after that time. Albumen was not found in her urine when she entered the hospital, but it was found in large amount on the 16th of September, the morning of the day set for operation. Pus was also present in large quantity, with some epithelium, but no casts could be discovered. The whole abdomen now appeared larger. The patient's pulse ran up to 120–130 and her temperature reached 103° F. in the evening. The idea of a twisted pedicle of an ovarian tumor presented itself, and I was on the point of operating at once, but finally determined to await further developments. A second day was set for the operation and again postponed, owing to the condition of the patient and a very great decrease in the amount of urine. After a saline cathartic she passed, in twelve hours, only four ounces of a densely albuminous urine of a very high specific gravity. The condition of the patient, especially as to her kidneys, appeared to contraindicate any surgical procedure. The following morning the record shows an increase in the twenty-four hours of nearly double the amount of urine. This was thought possibly due to a mixing of the two days' urine, or to the accidental addition of water. This was found not to have been the case, however, and subsequent measurement shows a great variation in the amount of urine, varying in amount from twenty-four to fifty ounces per diem.

[1] Paper read and specimen exhibited before the Medical Society of the District of Columbia, November, 1893.

After another period of waiting, an operation was finally done upon October 19, when the specimen (see Fig. 1) was removed by an abdominal section. When the abdomen was opened the color of the sac at once arrested my attention. It lacked the pearly color of an ovarian cyst. When the fluid was drawn off and the sac carefully examined, it was easily shown to be an envelope of a thick-walled cyst which was known to be the kidney by its anatomical relations. The opening in the sac was enlarged, and enucleation quickly accomplished, the ureter and vessels being tied separately. The ureter was found distended by a stone shown just below the dilated pelvis, and was tied off below this point. The sac was sutured to the upper end of the incision, in the median line, near the umbilicus. A piece of iodoform gauze was inserted for drainage, which was replaced by a small rubber tube in less than a week. In three weeks the wound was entirely closed, and the patient sitting up and ready to return to her home. The condition of the patient, after the operation, was for the most part satisfactory. Although she had a quick pulse and for a time a rise of temperature to 102° F. or 103° F. in the evening, there was no sign of peritonitis. Her urine contained a trace of albumen for a few days after the removal of the kidney, but all abnormal constituents rapidly disappeared. She passed very nearly twenty-four ounces of urine daily after the operation.

FIG. 1.



Hydronephrosis due to a calculus. The kidney is 8½ inches long, 5 inches wide, and 4 inches thick. (Photograph No. 92, N. S., A. M. M., Spec. 10,621, Path.)

Time of operation thirty-seven minutes.

The tumor with the fluid weighed seven pounds and is now in the museum of the surgeon-general's office, at Washington (Specimen No. 10,621, Path.). The pathologist informs me that nearly all traces of the normal kidney structure have disappeared. The stone was not weighed, as the specimen would be mutilated in its removal. It was of oval shape, flattened on the sides, and distended the ureter to four times its size elsewhere.

A CASE OF POPLITEAL ANEURISM.[1]

BY B. M. CUNNINGHAM, M.D.,
Pratt City, Alabama.

My object in presenting this case is to place upon record the unfavorable results of ligation of the superficial femoral artery for a popliteal aneurism in what was apparently a perfectly suitable case.

Joe W., aged twenty-one years, negro convict; medium frame, good muscular development, and adipose above the average. Has had pneumonia twice, syphilis, gonorrhœa, dyspnœa; shot by 32-calibre pistol in popliteal space. Family history good. Such was the record made when he was committed to the penitentiary, February 5, 1893. Soon after his committal he began to complain of pain in the popliteal region and in the knee-joint. An examination revealed a pulsating tumor in the popliteal space. The pulsation was distinct in every direction and strong. The tumor was not very distinct and was very deep-seated. Pressure of the artery above stopped the pulsation and the tumor seemed to disappear. The bruit was unusually pronounced, prolonged, and had a peculiar quality that the writer has never previously observed.

Diagnosis.—Traumatic aneurism of the popliteal artery, deep-seated, with very thin walls, and without fibrinous deposit.

The patient said that he recovered promptly from the original wound, which was about twelve months previous. He did not remember any tumor in the space at the time of injury, nor had he discovered the one he then had. He was placed under observation in the "out-door department," and was required to do no work, except of a light character around the prison. The symptoms increased; the tumor became more distinct, the pulsations stronger, and rupture seemed imminent. He was admitted to the hospital August 21, 1893, and placed upon a restricted diet and potassium iodide. No mechanical means for the cure of the aneurism were tried.

On September 7 the superficial femoral was tied in the apex of Scarpa's triangle. Silk ligature was used, and was cut short and the wound closed without drainage. Pulsation promptly stopped, and the tumor disappeared.

The limb became cool, but not cold. There was no shock; patient came from under the anæsthetic promptly, and expressed much relief from pain. On the 8th the leg was warm, and pulsation could be felt in the tibial. Patient doing well. Pulse and temperature normal until the sixth day after operation, when the temperature rose to $100\frac{2}{5}°$ in the evening; 100° next morning; 101° in the evening. On the fifth day a gangrenous spot, two

[1] Read before the Southern Surgical and Gynæcological Association, 1893.

by three inches, inner side of knee; on the sixth, fluctuation; the gangrenous tissue was removed, and about three ounces of sanious pus escaped. At the bottom of the cavity the ball was found and removed. Abscess cavity washed with bichloride solution and dressed antiseptically. Temperature ranged between 99° and 100°. Pulse never over 100. On the ninth day dark spots appeared over the course of the anterior tibial artery; limb cold. From this time on the gangrene gradually increased, until the foot and entire anterior aspect and lower part of the leg were gangrenous, of the dry variety, of course. On the 21st of September, or fourteen days after the ligation, the thigh was amputated in the middle third, the patient dying from shock in twelve hours. Some twelve ligatures were required to check hemorrhage, and the whole stump was exceedingly vascular, showing that the collateral circulation had been established. The ligation wound had entirely healed by primary union. The specimen removed from the limb after the amputation shows a sac which when closed would hold about an ounce; there is no sign of fibrinous deposit; the walls of the sac are exceedingly thin; the sac developed anterior to the vessels, and the periosteum had to be removed to dissect it from the bone; in fact, this seemed to form the wall at that point. Two openings are observed in the sac, about two lines apart and about one line in diameter; one of these communicates with the vein, the other with the artery. There was no thrombus in either the artery or the vein, above or below the sac; nor was there any discovered in the anterior or posterior tibial, but these vessels seemed *diminished in calibre.*

This case, then, was one of *traumatic varicose aneurism,* and accounts for the quality of the peculiar bruit heard.

The cause, no doubt, was due to the simultaneous wounding of the artery and vein. Whether the aneurism was at once formed, or subsequently from the giving way of the coats of the vessels at this point, I do not know. I am inclined to the latter view.

The cause of the gangrene in this case, in my judgment, was in the return of the blood of the collateral circulation through the opening in the vein, this being the point of least pressure. The absence of thrombi and the contracted condition of the tibial arteries, the absence of clot in the sac, seem to point to this opinion.

The important lesson that this case teaches is that, in cases of traumatic aneurism, where operative interference is instituted, the proper procedure would be to cut down upon the sac, open it, ligate above and below, both artery and vein, if both open into the sac, and remove the latter or not according to circumstances. As the latter, in traumatic cases, consists of proliferated tissue, and not the coats of the vessels, it may not be necessary to prolong the operation to dissect it out, which in my case would have been exceedingly difficult.

DERMOGRAPHISM.

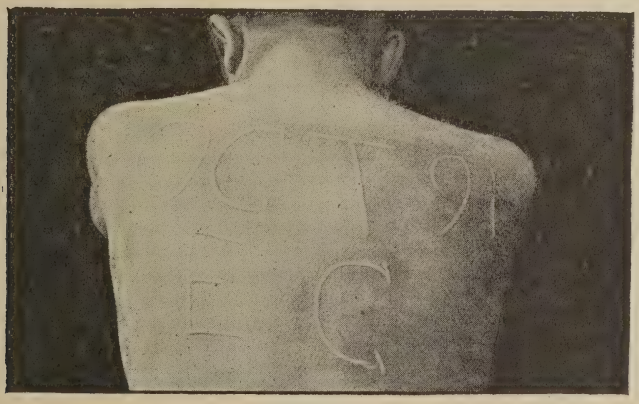
BY THOMAS LINN, M.D.,

Nice, France.

One has the opportunity of seeing quite a number of these cases in the Paris hospitals, where they are by no means rare; indeed, it is possible almost always to find one or more of these cases at the St. Louis Hospital, in Paris. The phenomenon is a very curious one, and has been known under various names for a long time, but has only been studied in detail of late years. It consists in the appearance on the skin of certain subjects, of wheals or elevations of the surface, rapidly formed, usually whitish or pale-red in color; these occur from the contact of any hard object, and are mostly produced by running the nail over the surface of the skin.

This condition has received many names, such as "artificial urticaria," "factitious urticaria," "provoked urticaria," and "nervous urticaria," but most writers call it at the present time "dermographism" or "pseudo-urticario-dermographicæ." The terms "stigmatodermia" and "dermatoneuro-

Fig. 1.



Photograph of a patient (not from the case described in the article) showing the elevated lines in dermographism.

sis" have also been used, as it is considered to be a vaso-motor neurosis due to some excitation of the vaso-motor nerves causing dilatation, and also as it has mostly been seen in patients who are of a nervous or hysterical type. It is only needed to see the phenomenon and the diagnosis is made. The seat of the malady is mostly the back. In old times these subjects were supposed to be possessed of a devil, and they took advantage of this to have some one trace the word "Satan" on their backs to get money and gifts from the credulous. It is only necessary to trace with the nail or a paper-knife some

letters or lines, and at once the well-known "cutis anserina" shows itself, and in a few minutes the whitish lines will take on a rose color. It will last from twelve to twenty-four hours. There is an increase of local temperature, but the patients, beyond feeling this heat, do not speak of any other annoyance or symptoms. Fig. 1 shows this condition on the back of a male.

An interesting case of this kind was lately reported by Schwab, house-physician to the Paris hospitals, from which we take the principal points. Dr. Dujardin-Beaumetz in 1879 spoke of a celebrated case of this sort that was known as the "sign-woman" or "autographic woman." Since then a very large number of these cases have been mentioned, both by dermatologists and neurologists, so that the symptom is well known, but the pathology is not so clear as it might be. The patient seen by Schwab was a woman who had cancer of the liver, a fact that seems to prove that dermographism is a *toxi-vaso-motor neuroderm.* In the case under consideration it was of hepatic origin.

The woman was fifty-nine years of age, and had entered the wards of Dr. Talomen, Tenon Hospital, Paris, September 1, 1893. Her medical history was that her father died of apoplexy, with left hemiplegia, at sixty-nine. The mother was sixty-six at her demise and had been afflicted with rheumatism and asthma. Of twelve brothers and sisters, seven are still living and two have rheumatism. Of herself, she had measles as a child, was regular from sixteen to fifty-two years of age, and was married at twenty-one. At twenty-five she got bronchitis, which little by little became chronic, and she suffered from want of breath in going up stair-ways. For the last twelve years she has had constant chronic bronchitis and emphysema. Two years ago she noticed a small hardening in the left breast, which increased slowly and did not bother her much; there was no loss of weight, no digestive trouble, but five months ago she found that the abdomen had swollen rapidly and she could no longer fasten her petticoats. At this time she had also a distaste for meat and a loss of appetite, with frequent nausea, but no vomiting. There was pain of a shooting character in the hepatic and epigastric region, but none about the breast; no jaundice, but loss of weight.

She was a stout woman with a healthy complexion and a good color when she entered the hospital. She presented the signs, on examination, of pulmonary emphysema and enlargement of the abdomen; the bowels were regular, the urine non-albuminous, and the heart normal. The left breast presented just under it a tumor that was extremely hard in its nature, and about the volume of a small orange. This was not painful and was accompanied by some hardened ganglions under the arm. In the right hypochondrium was seen a considerable enlargement, manifestly the enlarged liver, which was found to be very hard, and had its inferior border below the false ribs as much as three fingers' width. On palpation this hypertrophied liver was found to be very painful, while it had decided lumps on its internal edge.

During the month of September, under tonic medication, the patient progressed slowly, but by the 10th of October a new neoplasm was found under the left breast, and acute dyspnœa commenced. The conjunctivæ were now colored yellow, and the veins about the face were engorged. The volume of the liver was increased, and its surface was hard and covered with nodosities. The dyspnœa was discovered to be owing to an effusion into the pleura, and on withdrawing a quart of liquid from it some improvement resulted. It was at this time that we discovered the dermographism, by trying to limit the line of dulness of the liver with a pencil, we remarked that the tracing became white first and then pink, while the skin rose around the mark. On trying this symptom on the abdomen we found that the tracing re-

mained, and here it had a yellowish color, owing to the now jaundiced skin of the patient. This patient did not present any nervous stigmata or hysterogenetic zones, she had no derangement of sensibility, and was not, in fact, an hysterical person.

From October 20 to 25 there was a constant increase in her symptoms, and she died on October 26. At the post-mortem the two tumors of her left side were found to be of the scirrhous variety of cancer without capsular coverings, and they were as hard as stone. The liver occupied the right hypochondrium, the epigastrium, and nearly all the left hypochondrium, and it weighed all but ten pounds. Its whole substance was invaded by neoplastic growths of various sizes, from a walnut to an orange. Histological examination showed that there was an epithelioma of an alveo-glandular order, with a stroma of fibrous nature.

This case is a curious one, as it had evidently been one of carcinoma of the left breast which became a cancer of the liver from some cause unknown to us, and then presented the signs of dermographism.

Barthelemy has lately made a study of this symptom, and, according to him, the patients who present it are of two classes, nervous or arthritic. In order that the syndrome should present itself there must be a particular state of the nervous system. This may be, but it cannot be contested that it sometimes occurs in persons who are not hysterical.

As to the diseases in which it is seen,—we have, first of all, the spinal complaints, as tabes, syringomyelia, pachymeningitis, cancers of the vertebral column, exophthalmic goitre, diabetes, gout, lepra, hydatid cysts of the liver, alcoholism, dyspepsia, dilatation of the stomach, and now the case, as above reported, from cancer of the liver.

As to the pathology of the symptom, Barthelemy considers that two conditions are necessary for its production. First, *a nervous system particularly susceptible to impressions*, either by heredity or by acquiring the state. Secondly, some *toxic* agent which acts on the peripheric vaso-motors (cutaneous theory), or else a toxic agent that works on the vaso-motor centres of the medulla oblongata, thus making it a *dermographic neurosis of a toxi-vaso-motor order*.

This theory is carried out in the case of the patient related in this article, as she was manifestly a rheumatic person both in herself and in her family, and it is possible that this diathesis determined a state of the nervous system that allowed of this symptom appearing. Then add to this the evident *auto-intoxication* from the alteration of the hepatic gland, and the arrest of the function of the liver,—that is to say, in one word, the hepatic insufficiency, —and we have enough to explain this symptom of dermographism in the patient under consideration.

REGISTRATION OF TUBERCULOSIS.

At a special meeting of the College of Physicians of Philadelphia, held January 12, 1894, the subject of the proposed action of the Board of Health of Philadelphia in reference to the registration of tuberculosis was considered. After a discussion by Drs. Owen S. Wister, L. J. Flick, J. M. Da Costa, William Osler, H. C. Wood, Thomas J. Mays, James Tyson, A. C. Abbott, Frank Woodbury, S. Solis Cohen, R. A. Cleeman, James B. Walker, J. B. Roberts, and C. W. Dulles, the following resolution, offered by the council, was adopted:

Resolved, That the College of Physicians believes that the attempt to register consumptives and to treat them as the subjects of contagious disease would be adding hardship to the lives of these unfortunates, stamping them as the outcasts of society. In view of the chronic character of the malady, it could not lead to any measures of real value not otherwise attainable.

That strict attention on the part of physicians in charge of the individual cases, insisting on the disinfection of the sputum and of the rooms, on adequate ventilation, and on the separation of the sick from the well as far as possible, will meet the requirements of the situation so far as they practically can be met, and better than any rules that, for diseases so chronic, can be carried out by a board of health.

That the College of Physicians respectfully requests that no official action be taken in the matter by the Board of Health, except the insisting on the disinfection of rooms in which consumptives have lived and died in instances in which such procedure is not likely to have been adopted under the direction of the attending physician.

The following amendment, offered by Dr. L. F. Flick, was defeated:

Whereas, Tuberculosis is now known to be a contagious disease; and,

Whereas, The methods by which the disease is conveyed from the sick to the well are now clearly understood; and,

Whereas, It has been shown that the room which is occupied by a consumptive during the infectious period of the disease, and the furniture and the bedclothing which have been used by him, become infected, and are liable to convey the disease to others who may occupy or use them subsequently; and,

Whereas, Tuberculosis, owing to its long duration, cripples the bread-earning capacity of the family, when it occurs among the poor, to such an extent that the want and hardships which follow in its wake prepare the healthy members of the family for the disease; therefore, be it

Resolved, That we recommend to the Board of Health of the City of Philadelphia the registration and disinfection of houses which have been infected by tuberculosis.

Resolved, That we recommend to the City Councils of the City of Philadelphia the establishment of a municipal hospital for the treatment of persons suffering from tuberculosis.

In speaking on these resolutions, Dr. J. M. Da Costa says: When we speak of contagion in consumption, we cannot mean that it is markedly contagious. There is no proof that it is. It is not contagious like typhus fever,

or small-pox, or scarlet fever, or diphtheria. It is only slightly contagious. It is, indeed, so slightly contagious that some of our best thinkers, with the largest fields of observation, notwithstanding the evidence that has been adduced, still hold that it is not contagious at all. For instance, if we take the opinion of a man so long connected with the Brompton Hospital as Dr. Williams, we find in the last edition of his work on "Pulmonary Consumption," that he maintains that no more deaths from consumption occurred in the attendants of the Brompton Hospital than occurred among the same number in ordinary life. The evidence of Dr. Andrew, of the Victoria Park Hospital, is in the same direction. When we look at the conclusions of these men and at those of Wilson Fox and many others, it is going too far to assume that the whole profession admits the disease to be contagious.

That it is moderately so, and that it can be communicated under exceptional circumstances, I firmly believe; but that we should regard it as a very contagious disease, and take all the precautions that we do in such diseases, I deny. If it be contagious, it is contagious, as every one admits, chiefly through the sputum. Is it to be understood that an inspector from the Board of Health is to come daily to take care of the sputum-cup? Is not the intelligent physician the proper health officer? Is not what he says sufficient; and can he not advise and enforce the destruction or the disinfection of the sputum as well as any public officer? Finding bacilli in the bedclothes and on the bedstead, and destroying them, will not eradicate consumption. Tubercle-bacilli are widely diffused. They are in the dust of the air we breathe, blown about from the dried sputum of consumptives in the street. They have been demonstrated to exist on the fruit sold in our markets; they are in milk. They may, indeed, be said to be everywhere; and not only in the homes of consumptives. They have been found in churches, in places of amusement. Where will you draw the line as to watching and interfering with the life of the consumptive? Must we not take the broader view, and act on the degree of the communicability, and how far it is practicable to control it, rather than on the mere abstract question whether tuberculosis be contagious or not? The degree, every observer knows, is extremely slight.

The excellent series of observations made in regard to the direct relation of consumption to infected houses is, I believe, subject to several fallacies. In the first place, unless you know the history of the persons themselves, these observations on the houses supposed to be infected are not conclusive. You must know whether or not the individual inherited tuberculosis. I am one of those who believe that the disease is largely hereditary. Of what use is it to say how many living in these houses die of consumption unless you know the history as well as the number of those who have occupied them?

Again, we should bear in mind, when discussing the contagiousness of phthisis, how enormously prevalent the disease is, and how difficult it is to

draw conclusions when you have the most prevalent chronic disease to deal with. As bearing upon the question of infection from husband to wife, it has been calculated by Longstaff as a mere matter of statistics, without reference to the question of contagion, that of every one hundred and forty-eight thousand one hundred and twenty-one men who die of consumption in the ages of married life, there would be four thousand three hundred and fifty-eight wives who would have consumption,—that is, about one in thirty-three. Thus, for every thirty-three married men who die of consumption there would be one woman with it, as a mere matter of ordinary frequency, whether the disease be contagious or not, and the probability would be a little more for phthisical wives. The number of cases seen in which both husband and wife have been affected is comparatively small. Flint, in over six hundred and seventy cases, noted but five such instances. My record shows more such instances, including one where a tubercular husband had three tubercular wives. Still I have not met with very many, and the chances are always slight that the husband communicates the disease to the wife, or the wife to the husband. When we take all these facts into account, as well as the strong hereditary tendency of the malady, we must be careful how we draw conclusions in individual instances of apparent contagion.

Mindful of the observations made by Dr. Flick, I have for some time questioned myself with reference to houses that I have known for years in which there has been consumption. But I have not taken them in one district, but everywhere. And this seems to me a much fairer way of studying the question, as the indiscriminate selection obviates the likelihood of error from bad hygienic conditions, especially of drainage, that houses near each other might share.

I have many houses in mind in which no case of consumption followed the first. In one, the father died of a slow consumption twenty years ago. The mother is, as regards tubercle, perfectly healthy to this day. The seven children have grown up into exceptionally healthy young men and women. In another house the wife died of consumption about eighteen years ago. The husband continued to live in the same house, and a family of children have grown up healthy. Another house has been occupied for many years by a consumptive who has had the disease for twenty-five years. Neither his wife nor any one of the five children has become affected, though he is in the hands of a physician who does not believe in the contagiousness of the disease, and does not direct the sputum to be disinfected. Another house was occupied for years by a consumptive mother, whose husband had died of the disease many years before in another city. The son and daughter remained in the house mentioned for eight years in perfect health. It has since been occupied by a lady whose history I know, who is also healthy. The son got married about seven years ago, and has lived in various places. Within the last two years he has become a consumptive. His strong hereditary tendency determined it. I could go on citing instance after in-

stance. I admit they furnish negative evidence. But negative evidence in a matter of this kind is valuable. I am on the whole quite certain that in by far the larger number of cases where I have known the history of both the house and of the household for a long time there could not be even any suspicion of house infection. It is true, also, that in most of the houses cleanliness and ventilation were well attended to.

Further, in the question of house infection, we must not overlook the fact that these supposed centres of infection may adjoin and have common drainage. And, under any circumstances, does it not suggest that possibly there is something wrong in the drainage or subsoil as much as it does infection of the house? The well-known observations of Bowditch, and of others, have made us familiar with this mode by which consumption spreads in Massachusetts and in the whole of New England.

With reference to hospitals: Consumptive hospitals have been brought forward as a strong evidence of the non-contagiousness of phthisis, though I cannot say that the figures they adduce are to me absolutely convincing, and there may be something in the greater prevalence and concentration of the poison that makes consumptive hospitals more likely to be sources of infection. I have already referred to the observations and opinions of Dr. Williams and of Dr. Andrew. But as regards general hospitals in which consumptives are, they certainly cannot be shown to be places of infection. I will quote the remarkable results in the General Hospital of Vienna. That hospital is one of the largest in the world. It is full of consumptives, and there were, as we know by some observations made long since, and before the disinfection of the sputum was attended to, in three years two thousand seven hundred and thirty-six deaths from phthisis, and not a medical officer or a nurse had become infected. I will refer to the record of the Pennsylvania Hospital, which always has consumptives in its wards. I have taken some pains to ascertain the truth in this matter. In my long connection with the institution there never has been a time when there were not cases of tuberculosis in the medical wards, and there have also been cases of surgical tuberculosis in the surgical wards. Of one hundred and forty-seven resident physicians that have been in the hospital in the last seventy years, and of whom I have traced the medical history, and many of whom I have personally known and examined, but one has died of tubercular disease. Two others have at different times shown tubercular symptoms. One of these is now living in Arizona in fair health. In the other, even bacilli have disappeared from the sputa. The one dying did not die for over five years after leaving the hospital. Moreover, before becoming a resident physician, he was in delicate health, so that it is not fair to attribute his death to his having been in the hospital.

A stronger statement still can be made with reference to the nurses. Of forty male nurses that have been in the hospital in the last twenty-five years, but one has shown any sign of tubercular disease. He is now a patient in the hospital. He did not become tubercular until four years

after leaving. There have been one hundred and sixty-three female nurses whose histories can be fairly well traced. Of fifty-three that have left the hospital in the last five years, we know their present condition accurately. Not a single one of these certainly has had any tubercular symptoms, notwithstanding that there was always tuberculosis in the wards, always some exposure, and until recent years disinfection of the sputum was not practised, although ventilation was always attended to. There is only one case even doubtful. She has an occasional cough, and is not strong. Her father and mother both died of consumption.

When we take all these facts into account, granting, as I do, that up to a certain extent tuberculosis is contagious, I think that the recommendation of the council to the Board of Health is the right one. Why fix the brand of leper on a poor unfortunate because he has consumption, when the medical officer can do all that is necessary? He can instruct how to ventilate and keep the house pure, and how to disinfect the sputa. What more could a Board of Health do? What can it do, except in instances of death where proper disinfection may not be carried out? Where death has occurred, and where disinfection is not likely to be practised, it would be proper for the Board of Health to interfere. Under other circumstances, why should we place a stigma on the consumptive? Why have him pursued from house to house? Why have him a marked man? Why have the house a marked one? Why give it a bad name and injure the landlord because there has been a death from consumption in it? I think that the resolution offered by the council covers the whole case. No human being will suffer. It will only enforce on medical men the necessity to insist on proper disinfection and proper hygiene. It will do as much as possibly can be done, and as much as any Board of Health can do.

With reference to hospitals for the consumptive, there is a great deal to be said on both sides of the question. Undoubtedly larger means of separating the sick from the well are desirable. But whether this can be made in any way obligatory is doubtful; large social questions and questions of finance arise which take the matter far beyond our power materially to influence.

We must not overlook the strong hereditary tendency to the disease. If you ever want to get rid of consumption, it is not going to be simply by the disinfection of sputa and similar means. It will be largely by the prevention of the marriage of tuberculous patients. There you strike at the root of the evil. Until hygiene, preventive medicine, and law have reached that point, I think that we must let this question take care of itself, doing the best we can to limit the ravages of the disease. I admit that it would be most desirable if we could separate the consumptive from the well. If the state were rich enough to make colonies in climates in which consumption will not flourish, that would be the most admirable means.

Let me say that it is not because I do not believe that phthisis is communicable that I oppose the contemplated action of the Board of Health to

declare the disease contagious, and to register consumptives, but because I believe that the means proposed will produce hardship without corresponding value, and that they are both unnecessary and insufficient. The Board of Health has already the right, and may well enforce it, to have any house that, whatever the cause, has a bad sanitary record, put in better order. Moreover, it can do much in destroying other sources of infection, such as from diseased meat, from the milk of tuberculous cows, in improving drainage, in favoring open spaces that air and sunlight may get into houses. But let it leave the care of the individual where it belongs,—to the conscientious physician.

Dr. William Osler remarked that the question may be thus briefly stated:

First. Following a primary law of parasitism, the bacillus tuberculosis frequents chiefly that organ in its host which communicates most freely with the exterior. Just as countless thousands of ova are thrown off from the intestine of the bearer of a tapeworm, so from tuberculous lungs in a state of softening and cavity-formation, countless millions of bacilli are cast out daily with the sputa.

Second. The widespread diffusion of the parasite outside of the body has been demonstrated in the infectiveness of the dust and of the scrapings of the walls of rooms and wards occupied by patients with pulmonary consumption. Moreover, the greater prevalence of tuberculosis in crowded communities, the enormous mortality from the disease in prisons and institutions, and its frequent occurrence as a house malady, suggest that the conditions favoring its continuance are those which foster the growth and spread of a specific contagion.

Third. In the language of parasitology the lungs constitute the chief seat of election. But, apart also from gross pulmonary lesions, the proportion of autopsies in which the bronchial glands are found tuberculous speaks unmistakably for direct infection in the exercise of their function as dust filters.

On these grounds I believe that the registration of pulmonary tuberculosis would be beneficial,—enforcing attention to those sanitary details so apt to be slighted or overlooked, and diminishing directly the danger of contagion in the community.

Infection through food is closely related also to the endemic prevalence of tuberculosis. The incidence of the disease in the mesenteric glands of infants indicates that the gastro-intestinal canal is a portal of infection only a little less wide than that of the respiratory system.

The question of tuberculosis is not, however, settled with the disinfection of the sputa of consumptive patients.

The hereditary transmission of the disease must be accepted, though an estimate of the frequency of this mode of infection must necessarily be uncertain, but for certain forms Baumgarten's theory of latency is particularly suggestive. Tuberculosis has been well called the *pébrine* of the human race. The analogy is striking, for not only, as you will remember,

is the parasite of the silkworm-disease transmitted by direct contagion, but it also infects the eggs, which hatch, and may pass through various stages of development before they are finally destroyed.

Lastly, and here is consolation, the conditions which render individuals more or less immune scarcely yield in importance to those which maintain the vitality of the tubercle-bacilli in a community. So widespread is the seed that few of us escape infection, and the statistics of the Paris Morgue show that in more than fifty per cent. of adults the germs not only gain an entrance, but actually effect a lodgement. As a factor in tuberculosis, the *soil*, then, has a value equal almost to that which relates to the *seed*, and in taking measures to limit the diffusion of the parasite let us not forget the importance to the possible host of combating inherited weakness, of removing acquired debility, and of maintaining the nutrition at a standard of aggressive activity.

Dr. H. C. Wood.—I came here not to speak but to learn, and thus far have been quite successful. I wish to quote from a letter from Dr. Billings which has been placed in my hands. He says: "I should like very much to hear the discussion, but probably should have little to say, since I am doubtful as to what the decision of the College should be on this point. I presume that there are about six thousand people in Philadelphia affected with consumption, and that a considerable proportion of these have contracted the disease in infected houses. If it were possible by a systematic notification for the Board of Health to locate a considerable number of these infected houses, what steps would it take to purify them? How would it deal with those of the poorer classes who are affected with this disease, and with their furniture, bedding, and rooms? Until these questions are answered, I do not find it possible to form a definite opinion as to whether it is worth while to put in force a compulsory system of notification. Some of the worst infected rooms are probably those occupied by the criminal class, which is especially liable to this disease. For example, the Eastern Penitentiary is certainly thus infected; but in this I presume the Board has no jurisdiction.

"It occurs to me, that if the system of notification is to be tried, it might be best to commence with a limited area of the city in which the death-rate is now high; for example, the Seventeenth or the Seventh Ward, and see what results in diminishing the proportion of cases in this area can be obtained in the course of two or three years."

This thought has occurred to me, and has not been touched upon by any of the speakers. In a case of diphtheria the Board of Health is notified. The patient dies or gets well and the room is disinfected. Suppose, however, a case of consumption: the Board of Health is notified, the house is disinfected to-day but reinfection occurs to-morrow, and the end need not come for four or five years. Unless you add the power to forcibly remove the patient and shut him up in a hospital-jail where you can confine and permanently disinfect him, I do not see how you are going to get any good

results from the process of disinfection. As far as disinfection goes, unless you can prevent to-morrow's reinfection, I see little use in to-day's disinfection. If, however, the Board of Health could disinfect houses in which phthisis cases have died, something might be achieved, but the ordinary death notice is all the notification required for this.

CLINICAL LECTURES.

RHEUMATISM.

CLINICAL LECTURE DELIVERED AT THE RUSH MEDICAL COLLEGE.

BY HENRY M. LYMAN, A.M., M.D.,

Professor of the Principles and Practice of Medicine and Clinical Medicine.

THE patient whom I shall show you to-day is fifty years of age, and a travelling man by occupation. He neither smokes nor chews; and it is only occasionally that he takes a glass of liquor, so that we can exclude alcoholism in his case. He says he feels at times embarrassed while on the road in regard to his health. He is troubled with indigestion and belching of wind; but for the last two or three weeks has been free from this trouble. He has had typhoid fever, pneumonia, scarlet fever, diphtheria, small-pox, and, he says, syphilis years ago, but it was not followed by eruptions on the skin and loss of hair. The history of the latter disease is, therefore, obscure. He feels sensitive to cold. We will find out whether this sensitiveness of which he complains is in the flesh, or whether it follows the tracks of the nerves. I will take the arm and follow the large nerve-trunks down the inner side to the place where a branch of the radial comes off. Near the surface it is tender. Wherever we find a nerve which enters a muscle there is a tender spot. I am now feeling the pectoral muscles. I am on the long descending thoracic nerve that runs down the side of the chest. Squeezing the muscles does not give so much pain. When I press between the ribs it does not hurt him. When I press on the back it hurts him. We find in the distribution of the cervical and the upper dorsal nerves extreme tenderness, but below that he is all right. We have then a case of neuritis. The cranial nerves have escaped. The lower cervical and upper dorsal nerves are the centres of the disorder. He informs us that his case was a little more severe at first than it is at present. It seems that the muscles in the side of the neck were stiff and painful, so that the head was kept perfectly straight. There was nothing like torticollis in this case, a condition in which some of the muscles may be in a state of contraction so that the head is drawn backward, forward, or side-

ways, according to the situation of the affected muscles. Remember that the nerves which come out from the spinal cord are mixed nerves, containing sensory and motor fibres. A disturbance of these nerves would first declare itself as a sensory disturbance. Sensation is an exceedingly delicate function, and is easily disturbed. Any disorder of this kind gives rise to painful impressions before it interferes with motor impulses. This patient does not complain of paralysis, yet there is a painful absence of sensation in the fingers. The man feels the extremities of his fingers, but there is a painful loss of common sensation. This seems paradoxical, yet there are conditions of the sensory apparatus in which the power of tactile sensation is lost to a greater or less degree, and the patient suffers extreme pain in the parts which are deprived of the power of taking up tactile or common sensations. That is the reason why we come to speak of "a painful loss of sensation," and it seems exemplified in this case. What is the cause of it? We have excluded alcoholic poisoning, but it is probable that some other poison has been active. The history with regard to syphilis is not clear, but syphilitic inflammation of the nerves has a different history. It is connected with palpable lesions of the cord or of the brain; and here we have nothing of the kind.

In questioning him further, we find he has had malarial fever. Thirty-five years ago, when a young man, he had quite a siege of malarial fever. The effects of it have disappeared. Patients who suffer from malarial poisoning sometimes manifest symptoms of inflammation of the nerves that differs from neuralgia of the nerves. Neuralgia and neuritis are closely allied. An almost imperceptible inflammatory process of the nerves produces neuralgia; a severe inflammation produces neuritis,—so you see, the conditions may run into one another. Neuralgia is a sort of functional disturbance of sensation, while the pain that follows neuritis is the result of demonstrable disturbances of structure in the nerve, caused by inflammation. That is the only difference. Cases of neuralgia and neuritis may follow directly upon malarial poisoning, and are the consequence of profound intoxication. During the period of intoxication, or when the patient recovers from malarial poisoning, the nervous symptoms disappear, so that, as this patient has long since recovered from the effects of the old fever, we can exclude malarial neuralgia and neuritis. Gout, I think, we can exclude in the same way, though the patient's age would rather favor the development of gout. If he were a man in the habit of drinking beer and wine and living luxuriously, we might attribute his condition to gout, but he gives us no such history, consequently, we can exclude gout. We must, therefore, by exclusion, attribute his condition to that great enemy of the people,—rheumatism.

The peculiarity of this case seems to lie in the fact of the pain not being generalized. It does not involve the lower parts of the body; it does not involve the head. It seems for some reason to have attacked a segment of the membranes of the cord, and to have affected the nerves that are con-

nected with that segment of the cord. I should say, perhaps, segment of the cord. You remember how the peripheral nerves that come out from the spinal cord run through the sheathing membrane of the cord, and that when there is inflammation involving that membranous sheath, they become the seat of irritation and of pain and more or less disturbance of motion. That seems to be the condition in this case; and since we cannot refer it to the direct effect of cold, we must refer it to rheumatism. Why should the pain localize itself? The patient tells me it came on in July, during hot weather. You know how it is in hot weather: one should perspire freely. The patient says it takes a great deal to make him sweat. Even during very hot weather he sweats but very little, and as a consequence feels uncomfortable. He tells us that he is very nervous at night about getting to sleep; that he lies in bed until one or two o'clock in the morning before he goes to sleep. You find that characteristic in cachectic states. It does not make any difference what the cachexia may be, whether it be rheumatic, alcoholic, syphilitic, gouty, or malarial,—all these cachexiæ depend upon an intoxication that irritates the brain and produces a disturbance of sleep, which manifests itself in two forms: either the patient has great difficulty in getting to sleep, but then sleeps pretty well during the night; or he falls asleep as soon as he goes to bed, but wakes up about two o'clock in the morning, and lies awake for two or three hours, suffering perhaps more or less pain, before he drops to sleep again. These are the two principal forms of disturbance of sleep that we encounter.

With regard to perspiration, persons perspire more freely and easily during hot than cold weather. It is an unfortunate thing if rheumatic patients cannot perspire freely. Usually such are the most afflicted sufferers. I remember the case of a man who used to have periodical attacks of rheumatism, almost like that sometimes seen in drinkers and insane persons. He would have the most intolerable attacks of rheumatism, crippling him for weeks at a time. This case occurred many years ago, before we had the salicylates for relief of rheumatic pains. At last he changed his business and became boiler-inspector. The business of a boiler-inspector is to go inside of the empty boiler and examine it; the insurance companies send their agents to examine these boilers every once in a while, to see that they are in good condition to be insured against risk of explosion. The mode of inspection consists in emptying the boiler, then the inspector strips himself, goes into the boiler, and examines it from the inside. It is an object for these boiler-inspectors to examine as many boilers a day as possible; consequently, they do not wait for them to cool. They are simply emptied of water and cooled down to a tolerable degree, then the inspection is made. Well, this man did not have an attack of rheumatism after he commenced that business. He inspected two or three boilers a day, always came out in a wringing sweat, and rubbed himself dry, inspecting one boiler after another. It was a perfect Turkish-bath system. He perspired easily and profusely, and that is what I desire to impress upon your minds in these

cases. Persons who perspire easily and get a return of perspiration, if it has been checked by a chill, are enabled to throw off their rheumatic attacks more readily than those who sweat with difficulty, or who, when they get into a sweat, find it difficult to get up another after it. If they are exposed to the cold while in a perspiration, they take cold, and have an attack of inflammatory or muscular rheumatism, and find it difficult to get rid of it. That seems to be the condition of the patient before you.

Persons who perspire freely are very often negligent. When they are perspiring they walk against the wind with their coats open, or they sit by a window, letting the cold play upon them. Attacks of rheumatism are precipitated in this way. It is possible that the case of this patient originated in that way. You know how it is in the street and railway cars; a man sits by a window and the wind blows down his neck; the lower limbs are protected, while the upper extremities are exposed to cold draughts of air. Local inflammation is thus produced by refrigeration; it is in this way that we account for muscular rheumatism *a frigore*. There is another way in which refrigeration takes place: sometimes in the spring or fall we have cold weather, and as a consequence people are heavily clothed. We may have a succession of cold spells, after which there comes a warm day. These people do not keep their coats buttoned up; they get into a perspiration, stand on a street corner, or walk with the wind blowing on the back of the neck. The back is less thoroughly protected than other parts of the body, and this is unfortunate for patients who are rheumatic. The ribs and the spinal column should be thoroughly protected. You must enjoin these patients to button up their coats, and put the chest-protector behind instead of in front; better still, to have a chamois-skin undershirt, which affords an immense amount of comfort to patients who are sensitive to rheumatic attacks.

What shall we do for the relief of this patient? Turkish baths would be an excellent thing. If he cannot take them, a course of warm baths would be advisable. Let him jump into a tub of warm water, and remain there half an hour before going to bed; then get into bed and lie between blankets, so that he can sleep well protected. If perspiration follows the bath before going to sleep, let him have a dry rub, so that the skin and clothes shall be dry. A flannel night-gown is a protection to persons who have night-sweats. You must guard them against the effects of refrigeration by making them wear flannel night-gowns instead of cotton shirts. You can do a great deal for the relief of these patients in that way.

In case it becomes necessary to resort to therapeutic treatment, the drug to be used first is salicylic acid, which is somewhat effectual, but not as effectual as in cases of inflammatory rheumatism where the joints are acutely affected. You may try it for a week,—not longer than that. If it does not give relief, use phenacetin, acetanilid, or salol. See that the bowels are cleansed; give calomel and soda so as to evacuate them thoroughly, then keep them open. It is well to give these patients, after a thorough

evacuation, a blue pill at bedtime, to be followed in the morning by a Seidlitz powder, or a dose of mineral water, such as Hunyadi, Crab Orchard, or Saratoga water. If they cannot afford either of these, let them take ordinary Rochelle salts. But make sure there is a free evacuation of the bowels daily. After having exhibited these remedies in the manner described for a week or ten days, if pain still continues, it is advisable to commence the use of iodide of potassium and a little bichloride of mercury. Commence with the iodide, three grains three times a day, well diluted with water. If necessary, increase it to five, six, eight, or ten grains, three times a day. This will act upon the kidneys, and cause evacuation. Try these remedies for a while; and if the case is obstinate, change your tactics entirely. In a case running on like this for several months, I would not stop to use the preliminary methods that are applicable in acute cases. I would commence now, as in the chronic stage, after having evacuated the bowels thoroughly with calomel and soda, to give nitric acid (undiluted) in five-drop doses in a tumblerful of water three times a day, having the patient use a glass tube to suck it through, so that the teeth shall not be corroded by it. It does not make much difference when he takes it, before or after meals. Perhaps it is better to take it a little before, or an hour or two after meals, in order that the stomach shall not be filled too full. You will be surprised in a great many of the cases to see the relief from pain that follows this active diuretic course of treatment. A diuretic and diaphoretic course of treatment is what is most efficient in these cases. Turkish or hot-water baths should be taken daily for a month or more. It is in these cases that the benefit of the hot-brine baths of Michigan shows itself, and the hot springs of Arkansas, Las Vegas, Colorado Springs, and other places. These baths can be imitated at home if there be a bath establishment, especially if there be a man who can give massage, the patient taking this treatment along with the diuretic influence of nitric acid.

A CASE OF MYOTONIA (THOMSEN'S DISEASE) APPARENTLY ARISING FROM THE EFFECTS OF A FALL.

CLINICAL LECTURE DELIVERED IN THE JOHN SEALY HOSPITAL, UNIVERSITY OF TEXAS.

BY ALLEN J. SMITH, M.D.,

Professor of Pathology and Lecturer on Mental and Nervous Diseases in the Medical Department of the University of Texas.

GENTLEMEN,—In the year 1876 Thomsen, a Continental physician, described (*Archiv für Psychiatrie*, 1876, vol. vi. page 706) a curious muscular condition of which he was himself the subject during his whole life, and which was known to have prevailed in five generations of his family. This affection, since then commonly known as Thomsen's disease, consists essen-

tially of a condition of muscular irritability, in which any impulse to voluntary action is sufficient to induce in the muscles involved in the act a spasm of greater or less degree and duration, and to postpone the accomplishment of the action by the same interval of time as that measuring the muscular spasm. From the nature of the muscular phenomenon the name *myotonia* has been employed in connection with the malady, and because of its frequently observed hereditary tendency it has been called *myotonia congenita*. The name *transient myotone* has also been suggested (Gowers, "Diseases of the Nervous System," vol. i. p. 536) because of the usually transient duration of the muscular rigidity, this name being especially adapted to those cases, such as the one about to be presented, in which no hereditary influence can be discovered. While the instances of such muscular spasm at the inception of muscular activity have in the great majority of cases shown a congenital origin, there are nevertheless a number of instances in which no such hereditary feature has been mentioned, and in one or two examples the condition has seemed to follow nervous lesions. There have, however, as yet been no opportunities to investigate at autopsy the precise pathological conditions underlying the symptom, and the general impression of the profession, created for it originally by Leyden (*Klinik der Rückenmarkskrankheit*, 1874, Bd. i. p. 128), is that the muscular system is the especial point of departure from the normal. Hypertrophy of the individual muscle-fibres, irregular in its extent, has been recorded, determined by microscopic examination of tissue removed by the muscle harpoon; but there must remain a question whether the apparently hypertrophied fibres have not in reality been examples of muscle contracted through the irritation of the harpooning process. Were there really any marked degree of hypertrophy of the individual fibres, unless attended by a compensatory atrophy in other individual elements of the muscle, there should be a notable gross increase in the bulk of the larger muscle groups. As a rule, the muscles are well developed, and occasionally the development might be regarded as excessive, but this is by no means constant. The symptom of muscular rigidity as seen in Thomsen's disease has been noted in at least one case of pseudo-hypertrophic sclerosis of the muscles (Vigoroux, *Arch. de Neurol.*, 1884, viii. p. 273). Whatever the condition of the muscles, however, there is as yet adduced no sufficient reason for regarding the affection as an essentially muscular disease, and there is no cause why there should not be sought, as at least one of a number of underlying causes, some fault of the central nervous system, particularly in such part as may be implicated in a combination of motor and trophic disturbances; for example, the anterior horns of the gray matter of the spinal cord.

With this introduction, permit me to call your attention to the case before you, whose most prominent symptom at present is the myotonia characteristically present in Thomsen's disease, but whose history would indicate that beyond and before the muscular affection there exists some disturbance, organic or functional, of the spinal cord.

The man is a German by birth; is sixty-seven years of age; and has lived a roving life in America since 1854, with the pioneers in his younger days in California, engaged in the hardships of Indian warfare, and constantly exposed in his employment, which never rose above that of an ordinary laborer. Both his parents lived to old age, and, as far as the patient is able to state, there is no hereditary tendency to disease in his family. He has never been married. He passed through the usual list of children's maladies, has had numerous attacks of malaria since he has been in America; but has never suffered from any prolonged or severe illness. He presents on his person, on the head, neck, arm, and thigh, the scars from wounds from arrows and other missiles,—relics of the rough life he has lived. He denies all venereal taint, and an inspection of his person does not reveal any cause for doubting his statement. For years, however, he has used alcohol in decided excess, and has smoked and chewed tobacco without stint. The only untoward condition of which he has complained has been a persistent and obstinate constipation, which has been especially troublesome during the past few years.

About the end of last April he fell, while intoxicated, from a furniture cart to the street, a distance of not more than four or five feet, striking upon the right side of his head and upon the right shoulder. He was at once taken to Sealy Hospital and placed in the surgical ward. There was no mark or injury externally, and there had been no loss of consciousness. He was paralyzed, however, both as regards motion and sensation, from the lower part of the chest downward. He complained of no pain. The functions of the bladder and rectum were preserved, and the superficial and deep reflexes were abolished. After twenty-four hours the hands and arms had become anæsthetic and had lost the tactile sense, and the hands and wrists showed almost total loss of motor power, the arms partaking in a slighter degree in the motor palsy. By this time, however, he began to be able to move the legs in bed, the improvement continuing gradually but regularly. While this improvement began to manifest itself in the motor power of the lower limbs upon the second day following the accident, the same improvement was not apparent in the sensory functions, and progress was slower in the latter; moreover, while there did occur improvement in the lower limbs at this early date, the motor implication gradually ascended, the muscles of the neck becoming involved progressively, and the man becoming unable to lift his head from the pillow so as to arise or to sit up in bed. He states that, had it not been for this last-named difficulty, he would probably have been able to walk some days sooner than he did accomplish locomotion. He complained during this period of rest in bed, especially of sore feelings in the back of the head and neck; and he states that these sensations persist to a slight degree to the present. Gradually the sensory and motor palsy of the arms and hands receded, but there has not, even to this date, been an entire recovery of the normal sensations and motor power of either the upper or the lower extremities.

The patient states that during the period of improvement in the motor and sensory condition of the arms, there occurred swelling and moderate pain in the metacarpo-phalangeal articulations, the other joints of the fingers becoming subsequently involved in a similar manner. He further says that, for several months after he was able to walk about, any slight irritation of the surface of the arm, often arising from rubbing by the clothing, would cause a muscular contraction beneath the point of irritation; this being also true of the lower limbs, but to a less degree. It is possible at present, by drawing a finger somewhat heavily over the muscular portions of the arm, to induce a vermicular-like contraction in the underlying muscles. Aside from the slight pain complained of in the hands, a pain which can scarcely be regarded as any part of the attack in question, but as evidence of a concurrent mild rheumatism, the patient gives absolutely no history of pain, even in the earliest hours of the attack. He states that he constantly rested well, and during the entire course of the affection to the present time he has had a good appetite.

As he stands before you, the man exhibits a physique of at least average excellence. He is a man of about five feet eight inches in height, and weighs about one hundred and sixty or one hundred and seventy pounds. His muscles are firm and well but not abnormally developed. His posture is fairly erect. His hair is black, and but slightly tinged for one nearly seventy years of age. There is well-marked arcus senilis; the radial vessels are firm beneath the finger, and the pulse is one of high tension. The heart cannot be definitely demonstrated as hypertrophied, although in view of the arterial tension there can be little doubt of the presence of a moderate degree of left-sided hypertrophy. Moreover, the first sound of the heart has a thick booming note, attributable to increase in the muscular wall. There cannot be detected any valvular lesion. The respiratory and renal functions are apparently normal, and, with the exception of decided constipation, there are no symptoms of digestive disorder. The patient states that ever since his accident, but never before, when he arises in the morning he is in a mildly cramped condition, that his movements are interfered with, and that he must go through a stage of stretching before he is able to proceed as usual. Any rapid movements have become impossible because of the occurrence of a brief tonic spasm at the time of execution of the motion. In walking, if suddenly startled, as recently happened, on beginning to run, his legs refuse to move, and he falls headlong from the impulse of his body. Told to grasp an object, you may notice that a distinct hesitation follows the command and precedes the attempt, and that when told to let go his hold, there is present the same spasm. This condition of muscular spasm preceding muscular effort is most marked early in the morning after the night's rest, and generally after a period of rest in bed; it is worse in cold, wet weather, and better during the dry warm weather of the summer months. Generally after brief exercise the myotonic condition nearly disappears, at least to a sufficient degree to no longer interfere with ordinary working movements.

He was employed in the kitchen of the hospital for a time, and here he distinguished himself from his fellows by the number of dishes he permitted to fall and break when handed him by another; his grasp probably failing to be accomplished quickly enough to hold a dish when it was placed in his hand and released by the person giving it to him. His discharge from the kitchen was due to the fact that one day, when he was carrying a tray of dishes, some one startled him by a loud, sharp call; starting to run, his limbs suddenly stiffened, and, from his momentum, he fell forward and broke the dishes. Many similar anecdotes are told of those affected with myotonia, sometimes almost ludicrous: how the upraised fist of a combatant has been held from delivering a blow and his opponent has thus been given the decisive opportunity; or how, in mounting a horse, the limb has been held with foot in air and the would-be rider overthrown from his unsteady balance by a slight movement of the horse.

Aside from this symptom of muscular spasm the patient presents but few symptoms. There persists some diminution of the motor and sensory functions; in the latter case a perversion rather than a diminution, perhaps, exhibited in the numb sensations of the arms and limbs already referred to. The reflexes at first abolished rapidly reappeared. The patellar reflex on the right side at present seems slightly exaggerated, and the cremasteric and solar reflexes on this side respond much too readily for the age of the man. On the left side the patellar reflex is normal and the superficial reflexes are not apparent. The reflexes of the abdominal region and of the upper extremities are in no manner abnormal, nor are there any other localizing symptoms present in other situations.

It can easily be appreciated how such a condition might from its intensity and persistence become most distressing, and the appreciation of its nature and possible means of its relief a matter of serious import to its

subject. In the present state of our knowledge, therefore, I deem this apparently trivial case a proper subject to bring to the attention of the class; although perhaps the comparative rarity of the malady might be held as reason for the substitution of some more common and therefore more valuable subject of disease-illustration. It must, however, be recalled that every presentation of an uncommon affection creates some interest in its further study, and is productive of increased ability to recognize its phenomena, should they occur in the course of the future practice of the hearers. Moreover, it is questionable in case of the condition under discussion whether its rarity is not only an apparent one, and whether, were professional appreciation aroused, it would not be more frequently discovered. In the present instance, too, there are certain features of decided interest, if not of importance, in the development of the case that should be considered. The nature of the symptoms following the patient's fall, while not given us with the definiteness that is desirable, are sufficiently clear to allow us to decide upon the presence of an underlying hysterical factor in the case at that time. The rapid variation in the position of and recovery from the motor paralysis, the wide distribution and the rapid variation in the anæsthesia, the failure of implication of the bladder and rectum are most easily explicable by the supposition that they are due to hysteria. The persistence at the present of general motor paresis, the existence of an apparently functional muscular disturbance, and the coexistence of an exaggeration of the deep and superficial reflexes of one limb (without the existence of an ankle clonus) can be regarded as upholding no other view of the nature of the affection. The history of the blow, taken in connection with this view of the nature of the symptoms, at once suggests a similarity between this affection, or at least this case, and those more common cases spoken of variously as traumatic hysteria, traumatic neurasthenia, railway spine, etc.

Cases of myotonia are recorded as occurring in undoubted cases of hysteria and other nervous disorders by Hamilton (*Medical Record*, 1886, vol. i. p. 85); and this author distinctly indicates his belief in the hysterical nature of the symptom, depending in part upon a condition of insufficient nervous inhibition, in part upon an unstable emotional state interfering with volition. Cases have been described following severe nervous shocks, such as might be imagined as productive of the symptoms of an ordinary case of traumatic neurasthenia from a lightning shock, by Engel (*Philadelphia Medical Times*, 1883, p. 412); from a sudden fright, by Schönfeld (*Berlin. Med. Wochenschr.*, 1883, No. 27). So, too, one may frequently notice in cases of traumatic neurasthenia a condition of muscular excitability which may be held as at least analogous to the myotonia seen in the present case. Thus, frequently one may observe, when passing a hot sponge over the spine to detect hysterical spots, so-called, that when one of these areas is reached there occurs a muscular spasm in the underlying muscles from a superficial irritation quite unable to cause the disturbance elsewhere. The pathology of both

these affections is totally enshrouded, it is true; but, holding up the two conditions as related, hesitating to accept the total absence of an underlying anatomical fault, one readily turns to the spinal tropho-motor cells as either the final or the mediate seat of the origin of the disturbance. It is quite possible to imagine an irritability of the gray matter of the cord, due perhaps to a hyperæmia in the spinal substance or the meninges, and extending possibly to the emerging nerves or their coverings, as causing the motor spasms, the muscular hypertrophy, and as underlying in the present instance the peculiar differences in the reflex symptoms. The paresis which is noted in this case is not readily explicable by such supposition; and it is quite possible that the entire symptom complex must be referred to a general diminution of nervous impulse, best seen as a diminution of the inhibitive influence over the cornual cells of the cord permitting their unduly frequent but weak excitation and action. When one considers the matter in this direction it is easily comprehensible that all hysterical manifestations are really due to weakened nervous influences rather than to increased energy in the nervous system. This diminution of nervous force is necessarily seen best in those positions farthest from the sources of nervous energy, farthest from nervous ganglia; thus, in the eye, the retinal nerve-fibres, which must pursue the longest course, going to the margins of the retina, are the first to demonstrate their weakness in the appearance of a more or less uniform contraction of the visual fields in hysteria; thus, the failure of trophic power is early manifested in those organs where there is little nervous structure, as in the hair, early becoming colorless in these cases. This is a view strongly suggesting itself as a means of explanation of the various phenomena in the present case, as well as those of more common varieties of the hysterical condition.

Thus the paresis, motor and sensory, may be regarded as the result of a general weakening of nervous force, while the myotonia resolves itself into a repeated reflex spasm, possible because of the diminution of inhibitive influence over the multipolar motor-cells of the spinal cord. There is, perhaps, no reason why either of these conditions should not prevail in one or other instance, and it is quite probable that there are cases of each variety, (*a*) those due to excitation of the cornual cells of the gray matter of the cord, and (*b*) those due to loss of inhibitive power over the activity of these cells arising from a general diminution of nervous energy. To the latter of these classes the case before us seems most easily referable, the presence of reflex excitement in one limb being explicable by the supposition of special localization of the inhibitive loss or the coexistence of a localized irritability of the cornual spinal cells.

What in these cases may be the outcome? In most cases of myotonia the condition is a life-long one, and in those instances where the condition has manifested itself after the individual has reached adult life it has continued without material change during the remaining existence of the individual. There is little to be done in these cases other than to caution them

against exposure and to advise the constant employment of the muscles in moderate exercise. Quinine, following the line of suggestion made by Wood in case of chorea, might be appropriately administered in such a case as this, and I shall advise that the patient be placed upon moderate daily amounts, with the hope that it may influence the force of the inhibitory power of the central nervous system. All treatment is at the present but experimentation, a fact that is illustrated in our previous medication of the present case, a number of remedies having been employed without avail, —atropine, eserine, ergot, arsenic, iron, and silver, as well as a number of others.

REVIEW OF MEDICINE.

MEDICINE.

IN CHARGE OF JUDSON DALAND, M.D.,

Instructor in Clinical Medicine and Lecturer on Physical Diagnosis in the University of Pennsylvania; Assistant Physician to the Hospital of the University of Pennsylvania; Physician to the Philadelphia Hospital and to the Rush Hospital for Consumptives.

Experimental Examination as to the Appearance and Diagnostic Importance of Leucocytosis. (Experimentelle Untersuchungen über das Vorkommen und die diagnostische Bedeutung der Leukocytose. *Deutsches Arch. für klin. Med.*, Bd. li., H. 2 u. 3.) By G. Schulz.

The author emphasizes that an acute increase in the number of white blood-cells is not a disease, but is only a symptom, and insists that the word leucocytosis has only a local signification, and does not necessarily imply that there is an increase in the white blood-corpuscles in the entire blood mass. The Thoma-Zeiss hæmocytometer was employed, and not only was the blood of man examined, but also that of dogs, rabbits, and guinea-pigs. He again demonstrated that during digestion leucocytosis occurred with great regularity one and a half hours after the taking of food, not only in human blood, but also in that of carnivora. He inclines to the opinion that this leucocytosis is due to changes in circulation, brought about from pressure upon the veins during digestion. He considers this hypothesis strengthened by the fact that he was able to produce in himself a leucocytosis by rapidly bending and straightening his body. He thus produced an increase in pulse and respiration, and an examination of the blood immediately thereafter showed an increase in the number of white blood-cells. After injections of the Buchner'scher bacterianproteine from the Bacillus pyocyaneus, leucocytosis was observed, and also after wounds, as in the case of subcutaneous fracture.—*Centralblatt für die medicinischen Wissenschaften*, December 23, 1893, No. 51.

Parotitis in Pneumonia. (*University Medical Magazine*, January, 1894.) By William Osler.

The author reports a case of croupous pneumonia of the upper third of the postero-inferior lobe of the left lung, associated with a high grade of fibrine pleurisy at the same side. The case was especially interesting from the occurrence of parotitis as a complication, which is the only example the author has seen in his experience. He cites the case reported by Traube, where a double parotitis occurred on the forty-fifth day in a case of pulmonary abscess following pneumonia, and the patient recovered.

[It is interesting to observe that a similar case, occurring in a man aged sixty, was admitted to the wards of the Philadelphia Hospital in January, 1894. The right parotid gland became inflamed on the third day after admission, while the lung was still in the stage of red hepatization. The gland was fully three times its normal size, and moderately painful to pressure. The swelling gradually diminished, and in five days had disappeared. The patient recovered.—J. D.]

Three Cases of Beriberi. (Relation de trois cas de beriberi. *Gazette des Hôpitaux*, January 2, 1894.) By Kirchberg.

The author states that this disease is almost unknown in France, and refers to its frequency in India. The three cases came from Guadeloupe, and presented the ordinary symptoms of the "wet" variety. Paresis of the extremities was extremely well marked, and one was complicated with pneumonia of the right lung. Each was placed upon rest, antiscorbutics, quinine and electricity, and each made a good recovery.

The Diazo-Reaction in Typhoid Fever. (*New York Medical Journal*, December 23, 1893.) By Julius Friedenwald.

The solutions employed were (*a*) two grammes of sulphanilic acid, fifty cubic centimetres of hydrochloric acid, one thousand cubic centimetres of distilled water, and (*b*) five-tenths-per-cent. solution of nitrite of sodium. The reaction was performed by employing fifty parts of *a* and one part of *b*, mixed with an equal quantity of urine, placed in a test-tube, and saturated with ammonia. A carmine-red color was produced, which, upon shaking, colored the foam. Twenty-four cases of typhoid fever were examined; the reaction was absent in but one, and was obtained as early as the fourth or as late as the twenty-sixth day of the disease. It was usually present during the first week. In forty-three cases of pulmonary tuberculosis the reaction occurred in twenty-nine, each of which represented a severe form of the disease. It was absent in fourteen mild cases.

He concludes that the persistent presence of this reaction renders the prognosis unfavorable.

The reaction was also found in three cases of erysipelas, one case of bone-abscess of tubercular origin, one case of abscess of the liver, one case of suppurative glandular disease of the neck, one case of tubercular hip-

joint disease, one case of spinal disease, one fatal case of pneumonia, one case of cancer of the stomach, and one case of septicæmia. The reaction was never obtained in healthy individuals, nor in many disorders of various kinds, including twenty-one cases of malaria, eleven cases of diabetes, and forty-two cases of gastro-intestinal catarrh. These observations, therefore, entirely confirm those of Ehrlich.

His conclusions may be summarized as follows:

1. The diazo-reaction is of great diagnostic value in typhoid fever.

2. If the cases show a slight or no reaction between the fifth and eighth days, other appearances pointing to typhoid fever, it can be looked upon at once as an exceedingly light form, and the prognosis made acccordingly.

3. Gastro-intestinal catarrhs, accompanied by fever, always run their course without a reaction.

4. Very marked and constant reaction may accompany mild forms of typhoid fever and do not justify a bad prognosis.

5. Reactions appearing continuously for a long time in phthisis pulmonalis (two months) always indicate a grave prognosis.

THERAPEUTICS.

IN CHARGE OF ALEXANDER D. BLACKADER, B.A., M.D.,
Professor of Therapeutics, McGill University, Montreal, Canada.

Recent Studies in Naupathia, or Sea-sickness. (*New York Medical Journal*, December 9, 16, 23, and 30, 1893.) By W. N. Skinner, M.D.

In this very interesting paper the author, who has had much experience as surgeon on board several transatlantic lines of steamers, says that, after having studied the symptoms of naupathia in their completeness, he is convinced that they are due above all to the lowering of the blood-pressure, and that this lowering depended upon a paresis of the centres of innervation of the heart and arteries. To counteract this he uses a solution of atropine and strychnine hypodermatically. The following is the formula which he most frequently employs:

℞ Atropin. sulph., 0.02 gramme;
Strychnin. sulph., 0.04 gramme;
Aq. menth. pip., 40 grammes.
Ft. sol.

One gramme of this solution contains half a milligramme of atropine and one milligramme of strychnine, which he considers the adult dose. If in the space of two hours after the first injection the patient be not cured, he gives a second, and possibly a third two hours later. It is not prudent to exceed this amount per day. The effects are often surprising. In the majority of cases vomiting ceases at once, and soon afterwards no more nausea, cephalalgia, or distress is felt.

On Intestinal Antisepsis. (*Vrach*, No. 31, 1893; *Bull. Jour. de Thérap.*, December 15, 1893.) By Dr. Baczkiewicz.

The author in this paper gives us the result of a series of experiments conducted in the laboratory of Professor Nencki at Varsovie. The number of micro-organisms contained in a milligramme of fecal substance was determined before and after the administration of an intestinal antiseptic. In three of his cases from ten to twenty grains of beta-naphthol with five to ten grains of salicylate of bismuth were given daily. In one patient with a fistula of the large intestine, examination revealed about one hundred and twenty-five thousand bacteria to the milligramme before the administration of the antiseptic. Four days after he commenced the treatment the number had fallen to fifty-four thousand, and in thirteen days (eleven grammes altogether of beta-naphthol having been taken) only eighteen hundred bacteria to the milligramme were found. In another suffering from cæcal fistula, the number of bacteria was reduced from eight hundred and sixty thousand to ninety-two thousand after nine days' treatment. In a third case of chronic diarrhœa the result was not decisive, owing to the presence of pus in the fæces. In a case of general malnutrition, salol was administered to the extent of eleven grammes in five days, but without any effect on the number of bacteria in the fæces. Iodol administered to a diabetic in the dose of three grammes per day produced no bad effect on the general condition, but diminished the number of bacteria in two days from three million eighty thousand to two hundred and thirty-two thousand, and in five days to eighteen thousand eight hundred. Tannin exhibited in a case of gastro-intestinal catarrh in the dose of five grains a day produced after three days a fall in the number of bacteria from four hundred and seventy thousand to fourteen thousand.

The Use of Phenocoll in Malaria. (*Therapeutic Gazette*, December 15, 1893.) By David Cerna, M.D.

In this paper, after detailing some of the other therapeutic applications of phenocoll, the writer records the excellent results which he obtained from the exhibition of this drug in some cases of malarial intoxication; a few of which had already resisted the action of quinine and arsenic. Of twenty-eight cases under his observation, twenty-one were successfully treated by phenocoll. In the remaining seven failure was complete. Of these seven, three afterwards yielded to quinine, and four, in which quinine had also failed, were finally cured with arsenic. The dose prescribed was one, two, or even three grammes per day for four or five days consecutively. No disagreeable after-effects were noticed.

On the Treatment of Diabetes Mellitus, especially of its more Advanced Forms. (*London Lancet*, December 30, 1893.) By Karl Grube, M.D.

This writer, who claims a large experience, asserts that in those cases in

which diabetic coma is imminent, it is absolutely necessary to give food containing a certain amount of carbohydrates. He quotes Dr. Hirschfeld's experiments that acetonuria can be produced in healthy persons by giving them food consisting only of albumen and fat, and that it can be arrested by adding carbohydrates to the dietary. The writer believes it is a grave error in severe or advanced cases to keep the patient on an entirely nitrogenous dietary. He allows such patients potatoes in moderate quantity. White bread is preferred to either brown bread or toast. Fruits are absolutely forbidden. Saccharin he thinks liable to induce indigestion. Levulose is a better substitute for sugar, and can be utilized in the economy. He values highly in some cases the influence of some of the alkaline mineral waters, Neuenahr, Carlsbad, and Vichy, freely used. Bodily exercise or massage is of much service, but must not be carried to excess. Care must be taken to avoid overstrain of the heart.

NEUROLOGY.

IN CHARGE OF CHARLES W. BURR, M.D.,

Pathologist to the State Asylum for the Insane, Norristown; Visiting Physician to the Home for Incurables; Visiting Physician to St. Joseph's Hospital, Philadelphia, Pa.

On Localization in Aphasia. (Zur Localisation der Aphasien, *Arch. für Path. Anat. und Phys.*, Band cxxxii., Heft 2, 1893.) By Dr. Med. J. Leva.

This author, taking his material from the clinic of Professor Eichhorst, details the histories of seven cases, and after a careful study of them says, "These cases teach us that, when the aphasic lesion has persisted for only a short time previous to death, or when it has, after a short period, passed away, we should withhold our diagnosis of localization in the brain from the aphasia. This we should make a rule, since it is impossible to say, unless the lesion has existed for a long time, that its cause is not a local trouble which will pass away. Cases where a certain diagnosis can be made are seldom seen, or at least published, and these are mostly open to objection."

The centre for the understanding of speech he would hypothetically locate in the posterior portion of the first temporal convolution and the immediately neighboring part of the middle portion, while the impossibility to read and write, and especially to understand writing, which existed, he would localize in the completely involved middle portion.

On Acromegaly and Giantism, with Unilateral Facial Hypertrophy; Cases, with Autopsy. (*Journal of Nervous and Mental Disease*, No. 11, 1893.) By Charles L. Dana, A.M., M.D.

The author reports, with autopsy, a case of acromegaly in conjunction

with giantism. The patient apparently died of collapse; there were no pathological conditions found except the enlargement of the pituitary gland; its weight was four and five-tenths grammes. The circumference of the chest was fifty inches, and this, together with the enormous enlargement of the face, gave the striking features of the case. The hands and feet were enormous, somewhat in excess of what they should have been proportionately. The author thinks there is increasing evidence which places the pituitary body in close relation to acromegaly, and remarks on the giantism of all reported cases.

The second case, giantism with hemihypertrophy, was of a man twenty years of age, height seven feet four inches, and weight three hundred and twenty-five pounds. There was hemihypertrophy of the face that was progressive. The patient had the following symptoms belonging to acromegaly: the enlargement of the bones of the left side of the face, beginning at about puberty, the kyphosis and sclerosis, the enormous feet, the coarse hair, feeble muscular development, and prodigious appetite.

On Syphilitic Spinal Paralysis. (Ueber die "Syphilitische Spinalparalyse." *Berliner Klin. Woch.*, August 28, 1893.) By H. Oppenheim.

Additional Knowledge concerning the Syphilitic Spinal Paralysis of Prof. Erb. (Zur Lehre der syphilitischen Spinalparalyse von Erb. *Neurol. Centralbl.*, No. 12, 1893.) By Prof. P. Kowalewsky.

H. Oppenheim sharply criticises the paper by Erb (*Neurol. Centr.*, 91, No. 6), saying that that author has not described a disease, but only the symptoms produced by the localization of a known disease. He regards as necessary for the differential diagnosis of this disease from others the possession of the following criteria: 1, simultaneous or previous brain symptoms; 2, the characteristic progress of the disease and the fluctuating of separate symptoms; 3, the irritation symptoms of meningitis and the spinal nerve symptoms; 4, the symptoms dependent upon the multiplicity of foci; 5, the imperfectly developed symptom-complex of Brown-Séquard's "halflaming." In conclusion he says, "Is the symptomatology of Erb's a truly characteristic one for syphilis? I think not; by no means. Every other diffuse involvement of the spinal cord, and especially an incomplete transverse myelitis, can produce the same symptoms. And even the course, as Erb describes, of the change of a paraplegia to a paraparesis appears, without further proving, to be syphilis, while a termination in imperfect recovery occurs sometimes in myelitis of other origin. The course of the disease under specific treatment is alone characteristic."

P. Kowalewsky gives the clinical picture of this disease as follows, illustrating it by the full histories:

"The disease develops very slowly and gradually. In this respect it is similar to the symptoms of spastic paralysis, including its characteristic gait and poise. The muscles of the lower extremities are rigid to a slight degree, the reflexes of the knees and feet are always increased; often mus-

cular atrophy is observed, but without changes in reaction. The function of the bladder always suffers change, which often is the first symptom of the disease; the functional power of the sexual and intestinal tracts is also greatly weakened. Sensibility is nearly always altered; paræsthesia, temporary indefinite pains, slight dermal anæsthesias, etc., were observed. At the same time that the spastic gait appears, drowsiness, weakness, and numbness of the limbs and difficult movement, that can increase nearly to full paraplegia, may come on."

The author summarizes his general observations as follows: "1, spinal syphilitic paralysis is of frequent occurrence, though not so frequent as tabes; 2, it is found in the thirtieth to the forty-fifth years; 3, chiefly in the male sex; 4, vesical symptoms and oftentimes the rectal take on a spastic character; 5, the thermal reflexes of the lower extremities are in this disease greatly increased; 6, the psychophysical reaction to pain and tactile sensation remains intact or only slightly altered in spinal syphilitic paralysis, while in these two sensations the reaction is very markedly altered in tabes."

SURGERY.

IN CHARGE OF HENRY R. WHARTON, M.D.,

Demonstrator of Surgery and Lecturer on Surgical Diseases of Children in the University of Pennsylvania; Surgeon to the Presbyterian Hospital, the Methodist Episcopal Hospital, and the Children's Hospital; Consulting Surgeon to the Presbyterian Orphanage.

AND

JOSEPH P. TUNIS, A.B., M.D.,

Assistant Demonstrator of Surgery in the University of Pennsylvania; Surgeon to the Dispensaries of the Presbyterian, Methodist Episcopal, and Children's Hospitals.

The Results Obtained from the Use of Aniline Products in the Treatment of Carcinoma. (*Annals of Surgery*, November, 1893.) By Willy Meyer, M.D., of New York.

The results obtained by this method of treatment are considered by this author to be very satisfactory. It is "a palliative treatment," not a cure. "In *very* rare cases this treatment may cure. Carcinoma and sarcoma of hard type (especially the latter) are better influenced than soft ones; those of soft tissues easier than of the bones; those with a scanty blood-supply more successfully than rapidly-growing neoplasms with abundant circulation. The disseminated cancer is unsuitable for the aniline treatment. The treatment with parenchymatous injections requires a perfect knowledge and application of the principles of aseptic and antiseptic surgery." Further than this the *technique* consists of the injection, under all antiseptic precautions, of a one to five-hundred solution of blue pyoktanin, previously filtered through heated asbestos. The syringe is a well-working ordinary aspirator which holds two drachms. The amount injected varies with the size of the growth, and is usually one-half to three drachms. The dressing

should be antiseptic, pyoktanin gauze with collodion. "It is wise in the beginning of the treatment to distribute the dye through the entire tumor as rapidly as possible. The injections are, therefore, better made every other day, later every third day regularly.

"In handling inoperable neoplasms which are directly accessible, the needle is best pushed into the healthy tissue about one-third of an inch from the border-line and then conducted forward and downward towards the base in an oblique direction." In large growths the growth itself is attacked. He has often injected four and five drachms at one sitting. Care must be taken to distribute the fluid equally. Too large an amount deposited in one area will cause the tissues to break down.

The beneficial effects are "analgesic," "the improvement of function of the part," unmistakable change for the better in the general condition, and this improves the mental condition of the patient.

"In no case did the injections prove really harmful to the patient," though there may be some general and local symptoms that are annoying. "The local symptoms are different in ulcerating growths and in those still covered with healthy skin." There may be œdema of the injected part and neighborhood. This passes away under massage. Breaking down may occur, but healing is rapid under antiseptic treatment.

This treatment will, in the very best cases, require a continuous attendance for weeks or months.

Bloodless Amputation at the Hip-joint. A Report of Forty Cases by the Author's Method. (*Medical News*, December 9, 1893.) By John A. Wyeth, M.D., of New York.

The author gives brief histories of forty cases of hip-joint amputation by his method, in which the mortality was 22.5 per cent.

The original feature is the method of producing hæmostasis by means of rubber tubing; "it produces the absolute occlusion of every vessel at the level of the hip-joint safely above the field of operation." The *technique* of this method is described as follows: "To prevent any possibility of the tourniquet slipping, I employ two large mattress-needles, or skewers, about three-sixteenths of an inch in diameter and ten inches long, one of which is introduced one inch below the anterior superior spine of the ilium and slightly to the inner side of this prominence, and is made to traverse superficially the muscles and fascia on the outer side of the hip, emerging on a level with, and about three inches from, the point of entrance.

"The point of the second needle is made to enter one inch below the level of the crotch internally to the saphenous opening, and, passing squarely through the adductors, comes out an inch below the tuber ischii. The points are at once shielded by bits of cork to prevent injury to the hands of the operator. No vessels are endangered by these skewers. A piece of strong, white-rubber tube, half an inch in diameter and long enough when tightened in position to go five or six times around the thigh, is now wound very

tightly around and above the fixation-needles and tied." Whatever method has been employed for rendering the limb bloodless, as the Esmarch bandage, is now removed. The operation is now performed. In the formation of flaps, the surgeon must be guided by the conditions present. The author prefers, when possible, to begin the skin-flaps six inches below the tourniquet, and to raise a cuff that includes the subcutaneous tissues down to the deep fascia and dissect it off to near the level of the trochanter minor. This is followed by a circular cut through the soft parts to the bone; here the blood-vessels, veins, and arteries are tied with good-sized catgut. After these are tied the muscular attachments are lifted off with scissors or the knife, keeping along very close to the bone. The capsular ligament is then divided, and, by forcible elevation, abduction, and adduction the disarticulation is easily effected. If now the tourniquet be carefully and gradually loosened, each bleeding-point may be determined and the forceps applied as required until the tube is entirely removed. The wound is then closed, with a drainage-tube from the acetabulum.

ORTHOPÆDICS.

IN CHARGE OF REGINALD H. SAYRE, M.D.,
Assistant to the Chair of Orthopædic Surgery, Bellevue Hospital Medical College, New York.

A Proposed Operation for Inveterate Cases of Rotary Lateral Curvature. (*Am. Medico-Surg. Bul.*, January 1, 1894).—At the December meeting of the New York Academy of Medicine Dr. N. M. Shaffer read a paper on this subject.

In a certain number of cases the deformity increases in spite of treatment, and with a view to unwinding the twisted spine he proposed to operate for the purpose of dividing the ligaments, whose strength prevented restoring the vertebræ to a normal position, on the same principle that inveterate club-feet require an analogous operation before they can be straightened. He proposed this operation in 1892, but, as it was discouraged by the general surgeons to whom the matter was suggested, the operation was not performed. The method is as follows:

Make a large curved incision on the concave side of the curve from one inch above the upper end of the pathological curve to one inch below it. An incision is then made through the trapezius muscle in the same line as the original incision, and the tissues dissected away, towards the spinous processes. This exposes the erector spinæ muscles. If necessary these are now divided, thus reaching the transverse processes. All the soft parts are here divided transversely, and after introducing a curved director between the ribs, and underneath the costo-transverse ligament, this ligament is divided with a probe-pointed bistoury. A small forceps lever is then placed between the two adjacent transverse processes, which form the key-

stone of the curve, and they are separated. All the vertebræ involved in the curve are to be treated in this manner.

Dr. Shaffer has performed this operation twice on the cadaver. The spinal artery and nerve can be easily avoided, and there need be no fear of wounding the pleura. It was found quite easy to separate the articular processes with the lever.

Primary Tuberculosis of the Laminæ and Spinous Processes of the Vertebral Column. (*Philadelphia Polyclinic*, February 6, 1894.) By John B. Roberts, M.D.

Three months previous to admission to the hospital the patient, ten years old, had fallen down two steps. She became paralyzed in the legs shortly after the injury mentioned, which was slight. When the child was seen there was no marked deformity of the spine. Paralysis of both legs was complete, both of motion and sensation, and bed-sores existed. Subsequently, swelling about the middle of the dorsal region appeared, but it was evident that this was not the ordinary kyphosis of tubercular disease of the vertebral bodies. The swelling was most marked on each side of the median line, being greater on the right than on the left. Believing that the case was one of tuberculosis of the laminæ, and that there was probably an abscess within the spinal canal, the author determined to do a laminectomy.

An incision was made in the swelling on the right side of the vertebral spines, from which a small amount of cheesy material, some small fragments of bone, and a considerable quantity of fluid blood escaped. The blood was dark in color and seemed to come from an active venous hemorrhage. The swelling on the left side consisted of a mass of tissue infiltrated with tubercular deposit. The patient died on the table from shock and bleeding, though the bleeding seemed to come only from veins and was not excessive, though it was quite free. Before the patient succumbed two vertebral arches had been removed which were so soft that the ordinary scalpel cut through them with ease, except in one place where the chisel was used. The spinal cord was flattened, but the finger could easily be passed into the vertebral canal above and below. This showed there was no pressure, except at the point where the tubercular swelling was situated. The hæmatoma was apparently due to the opening of a vein by the disease. A section of the spinal column was removed, examination of which shows that the tubercular disease was limited to the laminæ, and had not attacked the bodies of the vertebræ. The primary disease, therefore, was in the posterior arches of the vetebral column, instead of in the bodies where it is usually found. A pathological examination made by Drs. Coplin and Bevan prove the destruction of the bone to be due to tuberculosis. The bacillus was found in abundance.

Dr. Roberts reported the case because of its rarity. Some orthopædic authorities say that primary tuberculosis of the laminæ is unknown.

Resection of the Ribs in Scoliosis. (*La Semaine Médicale*, January 31, 1894.) By Dr. Casse.

The doctor reported to the Academy of Medicine of Belgium, on the 27th of January, a case of lateral curvature in a child four years of age, in which he had resected two centimetres of the fifth rib, three centimetres of the sixth, two and a half of the seventh, and two of the eighth rib, on the side of the convexity. He based his reasons for the operation on the fact that after Estlander's operation for empyema there was often a falling in of the side from which the ribs had been removed with a bulging of the opposite side, and by a reversal of the process he hoped to obtain, after removal of portions of ribs on the convex side in scoliosis, a diminution of the convexity and a bulging of the previously depressed side. The ends of the ribs in Dr. Casse's patient were sewed together to prevent regeneration of bone from the periosteum, which might thus prevent the caving in of the side by filling the gap. He reports that the result of the case was favorable. The operation is intended for young children who have marked deformity. [In cases of such small children as that reported in this communication, the associate editor has never seen a distortion of sufficient gravity as to warrant such an operation, and should think it probable that these soft bones could be moulded into shape with a better result than by resecting portions of the ribs.—R. H. S.]

OBSTETRICS AND GYNÆCOLOGY.

IN CHARGE OF RICHARD C. NORRIS, M.D.,

Demonstrator of Obstetrics in the University of Pennsylvania; Physician to the Preston Retreat; Consulting Obstetrician and Attending Gynæcologist, Southeastern Dispensary and Hospital for Women and Children.

A Case of Absence of Uterus. (*Journal American Medical Association*, November 18, 1893.) By O. M. Doyle, M.D.

The author was called to examine a woman for insanity; found she had never menstruated, and on examination found a supposed intact hymen. It was determined to operate, when it was discovered that there was present neither vagina nor uterus. The patient recovered from the operation.

Symphysiotomy. (*Medical News*, December 2, 1893.) By Barton Cooke Hirst, M.D.

The results of a careful study of symphysiotomy and of Cæsarean section show, according to this author, that the latter is, at the very least, twice as dangerous to the mother as the former. As long, therefore, as the two operations hold this relation to one another in results, symphysiotomy must be the choice of the conscientious operator whenever it is practicable.

In regard to the indications he mentions two mistakes to be guarded

against: The use of this method, when a less radical means would safely deliver a living child; the other, the attempt to deliver a child through a pelvis too small to permit the passage of a living child, even when the pelvic bones are separated as widely as possible, without injury to the sacro-iliac joint. Version and extraction are sometimes possible, but the author is led to believe that this procedure may be more dangerous that symphysiotomy in a markedly contracted pelvis. The difficulty of estimating the conjugate from the diagonal conjugate is great, and to avoid this the author has devised a pelvimeter to measure the conjugate as nearly directly as possible. In technique he prefers the incision in the lower abdomen, extending to within about three-quarters of an inch of the symphysis, and the severance of the joint from below upward and within outward subcutaneously. Troublesome hemorrhage and injury to the urethra are avoided, and it is easier to secure asepsis. The old-fashioned model of the Galbiati knife is preferred, as it cuts almost entirely from below upward. Suturing of the symphysis is unnecessary. A firm pelvic binder is sufficient, with close apposition of the thighs and tying of the knees together, if necessary. A valuable preliminary step in the operation itself is the thorough dilatation of the cervical canal. For this purpose he uses, in addition to the ordinary Barnes bags, one twice the size of the largest ones sold, distending it to its fullest capacity, and allowing it to remain for some time. The fixation of the pelvis is secured by broad rubber adhesive strips and a stout obstetric binder coming well over the trochanters. The vulva is protected by a pad of salicylated cotton and carbolized gauze, and is cleansed by a stream of water from a fountain syringe several times a day, without disturbing the pelvis. To prevent stretching of the new-formed union in the joint, he has kept his patients in bed five weeks.

OPHTHALMOLOGY AND OTOLOGY.

IN CHARGE OF J. E. HARPER, A.M., M.D.,
Chicago, Illinois.

Irideremia, Glaucoma Simplex, and Zonular Cataract combined in one Patient.—At a meeting of the Johns Hopkins Medical Society, April 3, 1893, Dr. R. L. Randolph (*Johns Hopkins Hospital Bulletin*, vol. iv., No. 32) exhibited the patient and made the following remarks: "A. J. Bell, thirty-five years old. He never remembers to have seen well, and has always noticed that his right eye was the worse of the two. At one time he could see large objects with this eye, but now he has only light perception. He noticed the vision in this eye began to fail ten years ago, and now the eye is a useless one. He has never had any pain. Tension in this eye is markedly elevated, and an ophthalmoscopic examination has revealed glaucomatous excavation. He has also zonular cataract, which you can see quite readily by oblique illumination. The condition of the iris is

exceedingly interesting. You will observe that the iris is wanting in the lower and outer part of both eyes, and I should say that at least five-eighths of the iris is absent. Scarcely more than a rim of iris is to be seen above and to the inner side. This condition is known as irideremia, and, inasmuch as some iris still exists, it may be classed as incomplete irideremia.

"The vision in the left eye is about $\frac{10}{200}$. The excavation of the optic nerve is not so marked, but still is unmistakably present. The refraction of this eye, just as it is of the right, is myopic. The irideremia does not strike one as being quite so extensive in this eye as in the other. The location of it corresponds to that in the right eye.

"The anterior chamber is somewhat deeper in both eyes than we usually see, and this is due to absence of the iris. There is no noticeable increase of tension in the left eye.

"The pupillary reaction is absent in both eyes, and the edges of the irides are somewhat atrophied. Color sense is normal; of course I speak of the left eye, but there is narrowing of the visual field on the nasal side. The blood-vessels of the fundus appear unaltered."

Eye Symptoms in Cerebro-Spinal Meningitis.—Dr. R. L. Randolph has studied forty cases of cerebro-spinal meningitis with special reference to the eye symptoms, and reports his results in the *Bulletin of the Johns Hopkins Hospital*, vol. iv., No. 32. He says that "every case of strabismus was of the divergent variety. The cases of neuritis I take to be of the descending variety, involving the entire trunk of the nerve and its sheaths. It is possible that the numerous instances of congestion of the optic disk were simply beginning stages of optic neuritis. It is more than likely that had any of the six cases of neuritis survived, atrophy of the nerve would have followed. Such a condition I have recently seen in a boy who had cerebro-spinal meningitis eight months ago, and who is nearly blind at present.

"Three years ago I saw a child who, to all appearances, was totally blind during a long illness of meningitis, and where marked neuritis optica was present. Bad vision persisted for some time after recovery, and when I saw the child again he was just able to find his way about. A year later I learned from his family physician that he could see as well as ever.

"The treatment in these cases of consecutive atrophy is just as unproductive of good as one finds in the treatment of atrophy from other causes, though Moos[1] and Mauer[2] each reports a case where sight was restored by the hypodermatic injection of nitrate of strychnia and the employment of the constant current.

"It would seem that all epidemics of cerebro-spinal meningitis have one or more eye symptoms in common, and probably those most often met with

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[1] Archiv für Augen- und Ohrenheilk., 1869–70, Bd. i. S. 216.

[2] Med. Gaz., 1880, vol. vii. p. 687.

are the changes in the pupils and conjunctivitis. But every extensive epidemic is apt to be associated with a special type of eye affection. Thus Knapp, Kreitmair, Oeller, and Jacobi observed most often suppurative inflammation of the uveal tract, and make no particular mention of any other ocular complication. Wilson, Niemeyer, Ziemssen, and Hess met with keratitis, while Hirsch, in his wide experience, saw nothing more serious than conjunctivitis, which was an invariable condition. The type of eye symptoms peculiar to the epidemic which I have just described seems to have been a remarkable tortuosity and distention of the retinal veins and more or less congestion of the optic disk. The degree of venous engorgement in some of the cases was, in my experience, a unique condition, the blood appearing almost black and as though actually stagnant. The tortuosity of the veins, too, was striking. The turning-points of the veins were so abrupt that they resembled small hemorrhages, and as such I regarded them in one case till I was enabled later to make a more thorough examination, when I found that what I took to be hemorrhages were very abrupt turns in the veins where the circulation must have been almost at a standstill. These conditions are quite analogous to what was discovered in the brain in every case where a post-mortem was made. I was not present at any of the autopsies, but Dr. Porter told me that the tortuosity and distention of the veins on the surface of the brain reminded him forcibly of my description of the retinal veins, and the changes in these vessels I think can readily be understood from the condition of the brain revealed at the autopsy.

"It is clear, then, that in all epidemics of cerebro-spinal meningitis a systematic examination of the eyes should be made with the ophthalmoscope, and that frequently when other eye symptoms are absent and the general symptoms are misleading, changes in the fundus of the eye will be discovered which will throw light upon the case. And again, the existence of good vision does not mean a sound optic nerve or retina, for not unfrequently do we meet, in every-day work, with a choked disk where the visual disturbances are insignificant. Of the thirty-six cases which I examined, not counting those which were affected with diplopia, only three complained of their inability to see distinctly. I regard the existence of eye symptoms, especially those where the fundus is involved, as indicating a particularly grave case. Wherever I found the condition which I have described very pronounced, I felt justified in speaking positively as regards the prognosis. I think that this type of eye symptoms is of more value as indicating the condition of the brain than the symptoms described by other writers, such as panophthalmitis, suppurative choroiditis, and keratitis, affections which, in my opinion, would be likely to have their origin in a general infection and not likely to be the direct result of the purely cerebral changes."

DISEASES OF THE LARYNX, NOSE, AND SURROUNDING STRUCTURES.

IN CHARGE OF J. PAYSON CLARK, M.D.,

Physician for Diseases of the Throat, Massachusetts General Hospital; Physician to the Throat Department, Boston Dispensary.

Arthritis Deformans of the Larynx.—Dr. W. E. Casselberry (*New York Med. Journ.*, October 14, 1893) describes a case of this rare affection in a woman fifty-eight years of age. The patient had a general arthritis deformans, and the condition of the larynx when seen was an acute exacerbation of a chronic laryngeal arthritis. The arytenoid eminences were swollen and the movements restricted. Abduction of the vocal cords was impossible, there being only the smallest possible space for respiration. The posterior ends of the vocal cords (behind the vocal processes) were thickened. There was doubtless an ankylosis of the crico-arytenoid articulation.

The Etiology of Carcinoma of the Vocal Cords.—Egmont Baumgarten (*Wiener Klin. Wochensch.*, October 5, 1893) reports two cases of laryngeal cancer which he had an opportunity of observing before there was any sign of cancer. Supported by these and by other cases seen by him and by others, the writer feels justified in maintaining that in people over forty years of age with laryngeal catarrh, especially if a paresis, or, better, a limited motion of one cord is present, every submucous elevation or swelling appearing on an inflamed base is very suspicious. The suspicion is increased if the normal or reddened mucous membrane covering the tumor is lost and the latter begins to sprout. In such a case, even when other symptoms fail, and microscopic examination of a piece taken from deep down in the tumor is negative, if the process is developing somewhat rapidly, cancer would be a most probable diagnosis, and immediate laryngo-fissure and partial resection should be advised. Cases taken thus early offer the best chances for thorough extirpation and the prevention of recurrence of the growth. [It is to be presumed that tuberculosis and syphilis have been previously excluded.—J. P. C.]

A New Pathology and Treatment of Nervous Catarrh. (*Journal American Medical Association*, November 25, 1893.) By Dr. S. S. Bishop.

This writer believes that hay fever is due mainly to an excess of uric acid in the blood, and has treated cases on this theory, with good results. By doses of acid at night and in the morning, the matinal attacks of sneezing and nasal stenosis were broken up. Dilute sulphuric acid was first tried, but acid phosphate was found more satisfactory. Nitro-glycerin, nitrite of sodium, nitrite of amyl, etc., produce parallel effects. Opium, iron, and lead diminish the alkalinity of the blood and reduce the amount of uric acid. Quinine is contraindicated. For temporary use in the beginning of

nervous catarrh or common colds a mixture of atropine and morphine, one part to fifty, is valuable. The ordinary adult dose of this mixture is one-sixteenth to one-eighth of a grain, repeated in an hour or two if the first dose does not relieve the sneezing and the other symptoms. The author dispenses the remedy so that its composition is not known to patients. As a spray a solution of camphor and menthol, one to three per cent. in benzoinol, is recommended. The patient should avoid, as far as possible, meats, sweets, beer, wine, etc., limiting the diet largely to fruits, vegetables, milk, etc. From two to six grains of salicylate of sodium every day or two for two weeks to a month before the regular hay-fever season, will keep the acid in the body down to the normal amount. Any local organic disease should receive appropriate treatment.

DERMATOLOGY.

IN CHARGE OF W. A. HARDAWAY, A.M., M.D.,
Professor of Skin-Diseases in the Missouri Medical College, St. Louis.
ASSISTED BY
C. F. HERSMAN, A.M., M.D.,
St. Louis.

Protozoa and Carcinoma.—Adler (*American Journal of the Medical Sciences*, January, 1894) in an interesting paper refers to the great difficulty that exists in determining whether carcinoma is the result of the presence of protozoa in the tissues. There are at present no methods of pure culture, no specific stains, and a large number of cell metamorphoses which simulate parasitic cell inclosures. The author discusses the question as to whether a protozoon can be demonstrated, and whether one has been found which can be considered the cause of cancer. He draws his conclusions both from a careful consideration of the literature and from personal study. The conclusion arrived at is that the existence of protozoa in cancer is probable, though many of the appearances reported as such are to be explained in some other way; no constant or specific organism has yet been positively demonstrated.

A Case of Xanthoma Diabeticorum.—Payne (*British Journal of Dermatology*, November, 1893) records a case of so-called xanthoma diabeticorum, which presented the remarkable peculiarity of not having sugar in the urine. In its general and special peculiarities the eruption did not differ from those cases of the affection which have occurred in those afflicted with glycosuria. The author insists that the presence or absence of sugar in the urine at the time of the examination should not be made the essential point in a diagnosis of xanthoma diabeticorum, since in many of the reported cases the glycosuria has been a temporary phenomenon. On this

account Dr. Payne objects to the appending of "diabeticorum" to the name of this disease; the condition generally found is not a true diabetes, but a glycosuria. Dr. Payne thinks that in making a diagnosis of xanthoma diabeticorum the yellow color should be insisted on, as this is the most fixed of all the landmarks of the disease.

Pollitzer (*British Journal of Dermatology*, December, 1893) reports a case which contrasts with the one above in some points. The subject of the disease was a boy seventeen years old, who had probably had diabetes since his fourteenth year. The eruption was of the usual character and was very profuse, being in some parts aggregated into plaques. On the arms and forearms certain of the lesions had developed into large tumors half an inch in height and a quarter of an inch in diameter. Some of these tumors were excoriated, but this was always from injury, there being no tendency to ulceration. The disease was progressive, and in a comparatively short time the patient died.

Adenoma Sebaceum.—Pollitzer (*Journal of Cutaneous and Genito-Urinary Diseases*, December, 1893) reports a case of adenoma sebaceum which he states is the first instance of this rare affection to be reported from this country. The disease was situated upon the left side of the forehead of a young man, and at a first glance resembled a fresh hypertrophic scar. The diseased patch reached from just above the frontal eminence to just above the eyebrow, and was a quarter of an inch wide. The patch was made up of conical and rounded papules of the size of a barley-corn. Upon the summit of nearly all could be seen a dilated follicle, from whic could be expressed a brownish plug of sebum. Two small round yellowis cysts existed in the patch, from one of which there escaped on incision a creamy sebaceous matter. The entire patch was of a bright red color, but no telangiectases were to be seen. There were no subjective symptoms. A microscopical examination showed the growth to be made up of tissue which had preserved the arrangement of the normal sebaceous gland. The cysts were found to be formed by the degeneration of lobules of the proliferated gland. In some of the sections peculiar epithelial structures were seen, which suggested the condition described by Török as syringo-cyst-adenoma. These are supposed by the author to represent groups of embryonically misplaced epithelial cells which have proliferated while the centre of the mass has undergone colloid degeneration. The treatment consisted in crossed scarification, and the recovery was complete.

CLIMATOLOGY.

IN CHARGE OF GUY HINSDALE, M.D.,
Lecturer on Climatology in the University of Pennsylvania, Philadelphia.

Sending Patients away from Home. (*Boston Medical and Surgical Journal*, December 21, 1893.) By Dr. F. I. Knight.

This author cautions consultants to bear in mind the question of expense and to ascertain the resources of the patient before insisting on a change of climate. "It is cruel to set forth the great advantage of change of climate to one to whom it is utterly impossible to accept your advice. To advise a wife that going to Europe is the one thing that will restore her health, when this gratification is wholly beyond the ability of her husband, is very reprehensible, and may lead to unnecessary hard feeling in families. Short, temporary changes may suffice for the relief of acute conditions, but rarely for chronic ones. A patient may afford a short change who cannot afford a long one. It is a very rare thing, though I have seen such cases, that one season's residence away from this coast will suffice for the arrest of pulmonary tuberculosis, however slight."

Protective Influence of Forests.—Professor E. J. Houston ("Outlines of Forestry," J. B. Lippincott Co., Philadelphia, 1893) shows that in parts of the world from which the forests have been removed the number and severity of hailstorms have undoubtedly increased. Such storms never occur unless marked differences of temperature exist between neighboring portions of the air; the removal of forests from any considerable section of the country permits such differences of temperature to occur. The removal of forests also tends to increase the liability of the occurrence of early frosts in the neighboring agricultural districts.

Glenwood Springs, Colorado. (*Medical Record*, December 9, 1893.) —Dr. Henry M. Lyman gives a graphic description of a three-day trip from New York to Glenwood Springs. These waters resemble the springs of Aix-la-Chapelle, and are indicated for the relief of chronic catarrhal inflammations, arthritic diseases, and cutaneous disorders. For delicate patients ample provision is made in the tub-baths that occupy two floors of the spacious bath-house, while, for all who can enjoy the luxury of a swim, the open-air natatorium affords a pool five hundred feet long, covering more than an acre of space, constantly filled with water from the great hot spring, so that an almost uniform temperature of 85° F. is maintained during the entire year. As the spring water enters and leaves the pool at the rate of two thousand gallons per minute, its transparent purity never deteriorates. The water contains, in one gallon, 1089 grains of sodium chloride, 13 grains of magnesium chloride, 24 grains of potassium sulphate, 82 grains of calcium sulphate, and 24 grains of calcium bicarbonate.

REVIEW OF ITALIAN, SPANISH, AND PORTUGUESE MEDICINE.

IN CHARGE OF A. M. FERNANDEZ DE YBARRA, M.D.,
New York,
Corresponding Member of the Medico-Chirurgical Academy of Madrid, Spain, the Argentine Medical Circle of Buenos Ayres, South America, and the Society for Clinical Studies, of Havana, Cuba; Executive Assistant Secretary-General of the First Pan-American Medical Congress.

Phenocoll in the Treatment of Malaria. (*Gazzetta degli Ospitali*, Milan, December 7, 1893.) By Dr. Pietro Pucci.

Since the researches of Professor Tomaselli and other investigators of the existence of an "ictero-hæmaturic fever," characterized by severe chill, vomiting, hæmaturia, and jaundice, which makes its appearance in malarious districts, in individuals who cannot tolerate the smallest amount of quinine, nor any of the salts of cinchona, a good and reliable substitute for this universally-known antimalarial specific has been wanted. The first to propose the employment of phenocoll in the treatment of malaria, the author says, was Dr. V. Dall' Olio (see *Gazzetta degli Ospitali*, January 14, 1893). Professor Albertoni had previously pointed out the possible antipaludal action of this new remedy, and subsequently the clinical observations of Prati, Novi, Venturini, Crescimanno, Matarazzo, Vincenzi, Cervello, and other observers proved it to be so endowed, although Cohnheim, Polettini, Micheli, and a few others deny that it has any such specific action against malaria.

Dr. Pucci is a firm believer in the treatment of paludal intoxication with hydrochlorate of phenocoll. He gives three clinical observations of his own, in which he made use of it, and promises to contribute a more elaborate paper on the same subject, for presentation at the meeting of the coming International Medical Congress, to be held at Rome next April.

Nature and Cure of Cancer. (*Brazil-Medico*, Rio de Janeiro, August 8, 1893.) By Dr. Domingos Freire.

The author states that in 1886 he read a paper before the Medical and Surgical Society of Rio Janeiro on the parasitic origin of cancer, and in a pamphlet published by him the following year, entitled *Premières études expérimentales sur la nature du cancer*, he developed his theory of the etiology of this disease, founded in the existence of a special bacillus, somewhat resembling the bacillus of typhoid fever, discovered by him and easily detected in the blood of patients affected with carcinomatous cachexia. He adds that he was in Paris when Professor Scheurlen, of Berlin, published his communications on the same subject in *Deutsche Medicinische Wochenschrift*, No. 48, 1887, confirming his (Freire's) discovery, and he went to Berlin and there established his claim to priority at the meeting of the medical society held on the 19th day of December, 1887. The subsequent claim of other investigators that cancer is due to the evolution of coccidia and psorospermia

is not proved, as is shown by the work of Duplay and Cazin, who examined fifteen carcinomas and could not detect the coccidia.

In the Bacteriological Institute of Rio, in charge of the author, he has a large number of microscopical preparations and drawings to substantiate the discovery above stated.

Dr. Friere also says that since 1886 he isolated a basic toxine from the urine of cancerous patients, whose active virulence he attested by the rapid death of animals inoculated with it, this toxine being the elaborated product of the microscopical parasite found by him. He thinks that the recent experiments of Adamkiewicz with a poisonous substance found in cancerous tissues, and compared by him to neurine, fully confirm the existence of his basic toxine.

He gives the clinical history of two female cancer patients in the hospital of Nossa Senhora da Saude, to whom he applied subcutaneous injections of a sterilized culture of the so-called bacillus, at intervals of two or three days, followed by most miraculous good results. *Exceptis excipiendis.*

FORENSIC MEDICINE.

IN CHARGE OF LORENZO D. BULETTE,
Of the Philadelphia Bar.

PATIENT'S REQUEST TO SURGEON TO DISCONTINUE HIS VISITS EXCUSES FAILURE TO EXERCISE DUE DILIGENCE IN DISCOVERING A FRACTURE.

WHERE, by reason of its swollen condition, a surgeon was unable to detect the fractured condition of a patient's arm, and was told by her not to call again until she sent for him, and this, too, in the face of the fact that the surgeon informed the patient that her arm needed further attention, he was not liable for want of diligence in properly looking after the case.

The evidence at trial showed that the patient fell from her conveyance and injured her right arm. The defendant, a physician and surgeon, who was sent for by her to furnish the necessary surgical aid in the cure of the injury which she had sustained, made two visits, and then, at the patient's request, discontinued his visits. The surgeon, on examining the arm, did not discover the injury to be serious, but supposed it to be nothing more than a bad bruise. The arm became very greatly swollen, and it was finally discovered that one of the bones of the arm was fractured; and there was also testimony tending to show that the injury became, in a measure, irreparable, because of the delay in discovering the fracture. Evidence in behalf of the

surgeon tended to show that the arm was so swollen that a complete examination could not be made; that he informed the patient that her arm needed further attention, but that she thought she was getting on towards recovery, and that she would send for the surgeon if she needed him further.

The alleged negligence and unskilfulness of the surgeon, which was the cause of action for damages, was based on two grounds: *first*, that he failed to discover the fracture; and, *second*, that he failed to continue his visits, and let the evil effects of the fracture continue until it was too late to restore the fractured arm to its normal condition. The evidence on both these questions was contradictory, and the jury returned a verdict in favor of the defendant surgeon, and judgment was entered thereon. The Appellate Court, in affirming this judgment, said, "If the arm was so swollen that a complete assurance of the extent of the injury could not be discovered by a careful and skilful examination, and if the swelling was suffered to go on because the defendant was told to wait until he was sent for to continue the attendance, the case will fail for lack of proof. This was the finding of the jury, and the proof is sufficient to uphold the verdict. The parties differ in their remembrance of the facts. Doctor H., who examined the arm before the defendant, supports the defendant in his statement that the extent of the swelling prevented an examination which was needed to discover this fracture. The medical experts differ also upon the question whether a skilful surgeon ought to have discovered the fracture; but all agree that the swelling should have been reduced, and if the plaintiff prevented that by directing the defendant to make no other visit, on account of the expense, until he was notified, the defendant could not be properly blamed for the omission to diligently look after the case."[1]

The jury received careful instruction in the case, and that they fully understood it is shown by the fact that they returned into court and asked for the evidence as to the interview between the parties during the second visit. And the Appellate Court adds, "The jury evidently found that there was no lack of skill in the examination, and that the substantial discharge of the defendant made the plaintiff responsible for the injury thereafter occasioned by a failure to receive medical attention until it was too late;" and the judgment of the trial court entered on the verdict of the jury exonerating the surgeon from blame was accordingly affirmed.

It must, however, be borne in mind that it is not every dismissal by his patient that the practitioner is bound to obey. The relation of physician and patient is contractual; and, as mental capacity in the parties is necessary to make a valid contract, so a like capacity is necessary to sever the relation. Accordingly, if a patient be insane or otherwise mentally incapacited through delirium or the severity of his disease, the physician would not be justified in discontinuing his visits because requested or directed to do so by such

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[1] Gedney *v.* Blank, 41 N. Y. S. 794.

patient. Should he obey, and injury thereby result to his patient, the medical attendant would be liable in damages therefor.

In cases of this sort, it is the practitioner's duty to determine the patient's mental capacity,—not absolutely, to be sure, but according to his best judgment. The same rule of law that prescribes the conduct of the physician in a case of doubtful treatment must also guide him in determining to discontinue his visits; that is to say, he must use his best judgment, and that judgment must be based on the possession and exercise of a reasonable degree of medical knowledge and skill in the case in hand.

BOOK REVIEWS.

AN AMERICAN TEXT-BOOK OF GYNÆCOLOGY, MEDICAL AND SURGICAL, FOR PRACTITIONERS AND STUDENTS. By Henry T. Byford, M.D., J. M. Baldy, M.D., Edwin B. Cragin, M.D., J. H. Etheridge, M.D., William Goodell, M.D., Howard A. Kelly, M.D., Florian Krug, M.D., E. E. Montgomery, M.D., William R. Pryor, M.D., George M. Tuttle, M.D. Edited by J. M. Baldy, M.D. With 360 illustrations in text, and 37 colored and half-toned plates. Philadelphia: W. B. Saunders, 1894.

This work is issued on a plan similar to that of the "American Text-Book of Surgery," and, although the field is better covered in gynæcology by other modern works than is the case in surgery, there are not wanting valuable features in the present volume which give it a reason for existence beyond the commercial one. The admirable use of the camera in illustration adds greatly to the clearness of the text, though, as in many recent books, large and striking "process" plates are sometimes greatly lacking in detail. For example, Fig. 81, "Opening the Peritoneum," shows little except some hands about a cloudy wound. "Process" pictures are of great value, because their cheapness makes it possible to illustrate more freely, but their use requires discrimination. The engraver's skill gives usually a much better, because more distinct, illustration of particular points. The publisher has utilized this method abundantly.

Handsome as the work is otherwise, it is disfigured by several large, rather spectacular, full-length photographs taken perfectly nude in high lights, merely for the purpose of showing well-known postures. In this respect the work is not "American," for it is not in America that gross exposure of patients is seen.

The reader finds under the head of distortions and malpositions a carefully worded and thoroughly sound discussion of the methods of dealing with backward displacement of the uterus. The all-important difference made by the presence or absence of adhesions and disease of the adnexa is prominently brought out. A large part of the failures from the use of pessaries and other non-operative measures depends upon the presence of adhesions and inflammations.

The Alexander operation of shortening the round ligaments, while described with too little detail, is very properly stated to be quite limited in its field. Almost all cases of retroversion causing symptoms are either adherent or are associated with diseased adnexa and a defective pelvic floor. This operation is not suited to these conditions. Hysterorrhaphy or abdominal fixation of the uterus is preferred where the symptoms are of sufficient gravity to offset the slight risk.

Probably the most valuable part of the book relates to the methods of removal of fibroid tumors. It is in these methods that the greatest advance has been made in the past three years. No longer is the surgeon deterred by fear of hemorrhage from amputating the tumor within the abdomen and dropping the pedicle, or from totally removing uterus and all from above. The present work is up to date in dealing with this subject, with careful detail as to extirpation methods. It will seem startling to one unfamiliar with the progress which has been made to read, in the face of the excellent results heretofore attained by the use of the wire-constricting nœud, that "total extirpation is indicated, to the exclusion of every other operation, unless there be some special indication against it." The intra-abdominal method of leaving a small portion of the amputated cervix is considered practically a total extirpation, and is not discountenanced. There can be no doubt that the trend of opinion at the present day is in the direction of one or the other of these operations by ligation.

Curettage of the uterus in endometritis, and even where the inflammation has extended to the peritoneum, is advocated with vigor, and for reasons which must receive respectful attention from all operators, in spite of the bitter opposition still met by the procedure. The method insisted upon is all-important for safety, and includes aseptic dilatation, the use of the sharp curette, the gauze intra-uterine pack, and *aseptic dressing* afterwards. The technique given is that of one of the authors, a gynæcologist of New York City.

There is a notable absence of exact reference to authorities quoted. For example, the article on anomalies gives many names, usually foreign, but the absence of references decreases greatly the value of the material for purposes of study.

The same criticism applies to the anonymous character of the whole work, which detracts in the minds of many from its scientific value. Surgery has not yet reached such a position that thinking men care to take an unsigned or edited second-hand statement. They care for the experience of the men who have worked in particular fields. One who is familiar with recent literature can, of course, recognize the general authorship of many portions of the present volume, but where individual views are stated, as they not infrequently are, it would be more satisfactory to have the authorship given, that one might use his own judgment as to the value of the observation. No one thinks that ten active men can be found in these days who would agree as to the details of any operation, for example, which is in a stage of rapid development and transition. Discrepancies have, of course, been largely eliminated for consistency's sake. Some doubt as to the meaning of the ten authors is left after reading on page 415, as to vaginal enucleation of fibroids, that "many tumors now removed by hysterectomy are amenable to this procedure," and again, three lines below, "most tumors formerly subjected to this operation are now preferably extirpated from above."

Electricity comes in for a good deal of condemnation, as might be expected. It is justly complained that the effects claimed for it are not produced on parts of the body more open to exact demonstration. Its value as an aid in the treatment of subacute and chronic pelvic inflammation is admitted (p. 496). Its use in ectopic gestation is not considered to be in the best interests of the patient, though in the majority of instances it will kill the fœtus if used early (p. 539).

Typographically considered, the volume is excellent. The number of minor errors noted is unusually small. Such are the speaking of vaginismus as an "anæsthesia" (p. 186), and the spelling of Trendelenberg's name in two ways.

While throughout the work much prominence is given to operative treatment, the great importance of general management and study of the patient is brought out in many places.

G. E. S.

THE PHYSICIAN'S VISITING-LIST FOR 1894. Philadelphia: P. Blakiston, Son & Co., 1012 Walnut Street.

This little book unites durability with neatness, the covers being made of leather and calculated to resist considerable wear and tear. It contains a calendar for 1894–95; an explanation of the signs, recommending the metric or French decimal system of weights and measures; a table for converting apothecaries' weights into grammes; a posological table; a dose table; a list of new remedies; of incompatibility; of poisons and antidotes; of disinfectants; of practical examination of the urine; of the differential diagnosis of Bright's disease; of the diagnosis and treatment of the simpler diseases of the eye; table of the eruptive fevers; of asphyxia and apnœa; a table for computing the period of utero-gestation; and a comparison of thermometers.

It is arranged for from twenty-five to one hundred patients a day or week, and may be divided into two volumes, the price varying, in accordance with the size, from one dollar to two dollars. An inter-leaved edition is also sold for from twenty-five to fifty patients a day, as well as a perpetual volume which is good until used. This visiting-list is a very complete one and combines a great deal within a small space. As an addition to the pages for the compact entry of patients, it supplies a memorandum book with several blank pages for each month in the year, for entering engagements, obstetric cases, cash accounts, etc.

J. P. T.

SYLLABUS OF LECTURES ON THE PRACTICE OF SURGERY, ARRANGED IN CONFORMITY WITH THE AMERICAN TEXT-BOOK OF SURGERY. By Nicholas Senn, M.D., Ph.D., LL.D., Chicago; Professor of the Practice of Surgery and Clinical Surgery in Rush Medical College, etc. Philadelphia: W. B. Saunders, 925 Walnut Street, 1894.

This little book has been written in order that the student may separate the chaff from the wheat in his attendance on clinical lectures, and only memorize the facts which it will be useful for him to retain and apply at the bedside during his future professional career. It fulfils its purpose admirably, and will be equally useful to the student of medicine and to the lecturer on surgery. It contains the essential points laid down in the American Text-Book of Surgery, and by referring to its pages the busy practitioner may review at a glance the essential points in the diagnosis, etiology, and treatment of a great variety of surgical affections. This little syllabus is almost unique of its kind in that it has been prepared by one of the writers of the text-book which it condenses, and therefore it has the great advantage of having for its author a man pre-eminently fitted to do the subject justice. This terse *rêsumé* has frequently been made use of by Dr. Senn during his lectures in order that his material might be presented to the student in the most instructive way. Its practical usefulness is thus assured and it should prove helpful to many.

J. P. T.

HOLDEN'S MANUAL OF THE DISSECTION OF THE HUMAN BODY. Edited by John Langton, Surgeon to, and Lecturer on Anatomy at, St. Bartholomew's Hospital; Member of the Board of Examiners, Royal College of Surgeons of England. Sixth edition, revised by A. Hewson, M.D., Demonstrator of Anatomy in the Jefferson Medical College. Philadelphia: P. Blakiston, Son & Co., 1012 Walnut Street, 1894.

For the student of medicine, a text-book which furnishes only the essential points is an assistant much to be desired, especially in the dissecting-room. Holden's Anatomy has long held a high place among anatomical text-books. In this edition the entire work has been gone over very carefully and a number of essential points emphasized by foot-notes. Over a hundred illustrations have been added, increasing

the number from two hundred and eight to three hundred and eleven. It will be especially useful to those beginning the study of anatomy, as it deals very thoroughly with the principles and most important points of the subject described. The illustrations are more diagrammatic and more roughly executed than those used in Gray's Anatomy, but they have one advantage for the beginner in that a number of them have the most important structures so carefully inscribed that there is no mistaking them; for example, the student in doubt as to the circulation of the hand would only have to turn to page 341, where a diagram of the superficial and deep palmar arches would show him at a glance the exact distribution of these arteries. The anatomy of the femoral canal and of the saphenous opening is carefully described, and leaves little or nothing to be desired in the description of these parts. The book is provided with a rubber cloth cover so as to protect it from dirt in the dissecting-room. The only adverse criticism we have to make of the book is that it does not contain an epitome of osteology, as it presupposes a knowledge of this important and somewhat complex subject; but with the knowledge of the bones already secured, this interesting volume will prove exceedingly valuable.

J. P. T.

The Physician's Wife and the Things that Pertain to her Life. By Ellen M. Firebaugh. Illustrated with 44 photo-engravings of sketches from life. Philadelphia: The F. A. Davis Co.; London: F. J. Rebman, 1894.

This modest book deserves more than a passing notice. It is a true idyl of a country doctor's life: sordid in spots where the "res augustæ" show, but always true in ethics,—the finer ethics which lie behind and beyond the best of codes. The scene is laid somewhere west of south and south of west,—we leave the reader to discover where. The surroundings are rude. The doctor's emoluments are varied in character but very same in pecuniary value, but always the doctor's wife touches his work and his trials with a gentle hand, thoroughly realizing all his hardships, though never blind to his faults. We think that almost as much practical truth can be read in these pages by the sympathetic—those gifted with that finer eyesight whose absence no lenses can ever supply—as in that well-known and widely-read volume, "The Physician Himself," which seems, by the way, to have inspired the "physician's wife" to write her book. Perhaps, too, she has chosen her time wisely, for ere many years the very title she uses will sound oddly to the men and women of a newer era, and "The Physician's Husband" will perchance issue from the press, written by that humble individual in the few moments of leisure snatched from his household cares.

E. W. W.

Hernia: Its Operative and Radical Treatment in Adults, Children, and Infants. By Thomas H. Manley, A.M., M.D., Visiting Surgeon to the Harlem Hospital; Consulting Surgeon to the Fordham Hospital, etc. The Medical Press Company, Limited, 1725 Arch Street, Philadelphia, Pa., 1893.

This little book deals with the precise origin and anatomy of this condition, as well as the operative procedures for its relief. Several wood-cut illustrations add to the value of the text, and enforce the valuable observations which the writer has been enabled to make by reason of the very varied experience which he has had with the various types and phases of this condition. The book is an excellent monograph on the subject, and is completed by a large bibliography which contains references to the writings of the master minds in surgery.

J. P. T.

NOTICES.

MEETING OF SOCIETIES.

The American Medical Association will meet at San Francisco, California, June 5, Dr. R. H. Plummer, chairman Committee of Arrangements.

The Medical Society of the State of Pennsylvania will meet at Gettysburg, May 15, Dr. E. E. Montgomery, 1715 Walnut Street, Philadelphia, chairman Committee of Arrangements.

ALVARENGA PRIZE OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

The College of Physicians of Philadelphia announces that the next award of the Alvarenga prize, being the income for one year of the bequest of the late Señor Alvarenga, and amounting to about one hundred and eighty dollars, will be made on July 14, 1894, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered.

Essays intended for competition may be upon any subject in medicine, but cannot have been published, and must be received by the secretary of the college on or before May 1, 1894. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within it the name and address of the author.

It is a condition of competition that the successful essay or a copy of it shall remain in possession of the college; other essays will be returned upon application within three months after the award.

NOTE TO CONTRIBUTORS.

Accepted manuscripts will be liberally compensated for, immediately upon publication; or reprints, if stated on the manuscript, will be furnished in lieu of such compensation. It is distinctly understood that all articles appearing as original matter are for our exclusive use, and are not to appear in any other publication excepting the transactions of the society before which the paper may have been read. Illustrated articles are especially desired.

All matters of business, as well as subscriptions, should be sent to the International Medical Magazine Company, 716 Filbert Street, Philadelphia.

Manuscripts, exchanges, and books for review should be addressed to the Editorial Office, 3455 Woodland Avenue, Philadelphia.

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ORIGINAL COMMUNICATIONS.

NERVE-SUTURING (NEURORRHAPHY): DEGENERATION AND REGENERATION FOLLOWING SECTION; MICROSCOPICAL APPEARANCES.

ONE OF THE MÜTTER COURSE OF LECTURES DELIVERED BEFORE THE PHILADELPHIA COLLEGE OF PHYSICIANS.

BY DE FOREST WILLARD, A.M., M.D., PH.D.,

Surgeon to the Presbyterian Hospital, Philadelphia; Clinical Professor of Orthopædic Surgery in the University of Pennsylvania.

THE surgical treatment of affections of the peripheral nerves owes its prominence very largely to the fact that the general practitioner and the neurologist, into whose hands many of these cases fall, find themselves at times utterly helpless in the management of diseases of this class, and the surgeon is called upon for aid. Unfortunately, surgical measures are by no means always successful; but immense advances have been made during the past decade in diminishing the number of unsuccessful cases operated upon.

The most striking revolution in the pathology of the nerves took place about one hundred years ago, when Cruikshank taught that nerves do not always degenerate when cut, but that they are sometimes restored after section. During the last thirty years much has been done to point out the surgical means by which wounded and degenerated nerves may be repaired. Unfortunately, on the one hand, nerves fail to unite when left to themselves after injury, and, on the other hand, sometimes show a wonderful persistency in uniting when for any cause they have been excised.

A severed nerve degenerates; the peripheral portion begins to undergo

the retrograde change throughout its entire length within from twenty-four to forty-eight hours after the injury has been received. The best observers are now opposed to the belief that this process starts at the cut end and spreads downward. The changes observed are the destruction of the myeline, the multiplication of the nuclei, and the loss of continuity of the axis-cylinder. Marked atrophy is observed in the course of two or three weeks. The microscopical appearances in nearly all of these cases show that the axis-cylinder as well as the myeline in the distal portion has degenerated. The proximal end undergoes little change. Observations show that the myeline, instead of becoming broken into large fragments which subsequently become smaller, as in the peripheral end, is rapidly reduced into fine granules, which later on assume a yellowish-brown color with osmic acid. The nuclei multiply and increase in size.

In order to test more perfectly the different methods of nerve-suturing, to give the procedures a fair trial, and to observe the microscopical changes, I have during the past summer experimented upon a number of dogs, of which the following is but the partial summary of results. In all of the experiments the part to be operated upon was cleanly shaven, the skin thoroughly scrubbed with soap, brush, and water, then with bichloride, and the area protected with bichloride towels. The instruments and the hands of the surgeon received the most careful attention. The wounds were washed with from 1–1000 to 1–2000 bichloride solution and closed, sometimes with catgut drainage, but usually without any drainage. Ether was used in each case.

From my experience with dogs I am very decidedly of the opinion that it is impossible to secure thorough antisepsis with the care which it is possible to obtain from ordinary attendants. The wounds were dressed with iodoformized collodion, but to retain an antiseptic dressing is impossible in most of the regions of a dog's body. The persistent and indefatigable efforts which most of these animals exhibit to displace and remove the bandages are prodigious. In the limbs encasement by gypsum bandages is sometimes advantageous. I believe, therefore, that the tongue of a dog, applied, as it usually is, with such constant frequency to a wound, offers ordinarily as good hope of quick recovery as can be obtained under poorly-maintained asepsis. With perfect laboratory arrangements, of course, asepsis is possible, but these surroundings are ordinarily unattainable.

Experiment No. I.—Nerve-resection: suture. Black pup. The region over the sciatic nerve posterior to the great trochanter was rendered thoroughly aseptic as above described. An incision was made dividing the fibres of the muscle longitudinally, and one-quarter of an inch of the nerve was resected. The divided ends were stitched with fine chromicized catgut, using a round sewing-needle, the ends of the nerve being purposely left a quarter of an inch apart. The sutures were introduced crossing each other at right angles. The nerve was disturbed as little as possible. The muscles and skin were sutured separately, and the wound was cleansed and closed with iodoformized collodion.

On the following day I was astonished to find that the dog was able to walk and even to skip about, apparently having but little concern about the operation, although I was certain that I had divided the entire nerve. Subsequent events proved, however, that a portion of it had been left uncut.

The next day under ether I removed three-quarters of an inch of the left sciatic, dividing also the branch which ran to the gluteal muscle. A compact bundle of four strands of catgut was stitched between the two ends, thus bridging the gap for the original distance of three-quarters of an inch. The wound was closed as on the other side.

On the fourth day there were no signs of suppuration on either side. The wound on the right side appeared to have united by first intention.

On the ninth day the wound on the right side was almost entirely healed, being covered only with a slight scab. There was no paralysis on the right side, no drop of the foot or toe. The limb was apparently almost normal. On the left side there was paralysis of the extensors of the toes, and the pup was walking upon the dorsum of the foot,—that is, in a condition of extreme equinus, though the limb was well handled and the animal was able to run quite briskly, save for the toe-drop alluded to. Beneath the wound on the left side was a quantity of serum, which was pressed out, but there was no pus. The wound was washed out with bichloride solution, 1–2000, and thoroughly cleansed. Catgut drainage was instituted and the wound was covered with iodoformized collodion.

On the twentieth day the animal was perfectly well in the right leg; on the left side he was walking upon the dorsum of the toes.

On the twenty-fourth day both wounds were perfectly healed. The pup was frisky, gambolled about, and walked on the soles of both feet. One would scarcely detect that an operation had been performed upon him. He was a young dog, and this may account for his having done so admirably.

He continued well, and was killed on the forty-sixth day. On the right side at the line of division, the cicatrix, skin, and superficial tissues were firm and healthy. The site of the operation upon the nerve was distinguishable only by a slight enlargement, and to the naked eye there had been apparently perfect union. On the left side the bundle of catgut had disappeared; the cicatrix was firm and thoroughly healed. The upper end of the lower fragment had wandered, and finally attached itself upon the under surface of the biceps, half an inch below the trochanter. The end of the upper fragment was bulbous, and lay behind the trochanter in a bed of connective tissue.

Microscopical Examination.—Weigert's and Pal's stains were used. *Left Nerve* (Fig. 1).—Upper fragment terminates in a bulb of fibrous tissue which contains numerous nerve-fibres radiating like a fan from the termination of the nerve-fibres. The sheath is continued into the fibrous tissue of the bulb, being considerably thickened before the new fibres split up. Scattered through the fibrous tissue are numerous nerve-fibres, making their way towards the lower fragment. Below are seen drops of degenerated myeline in several spots. The lower fragment also shows beads of degenerated myeline. (Examinations by Dr. W. S. Carter.)

Right Nerve (Fig. 2).—Apparently there is a continuity of nerve-fibres as viewed with the naked eye. The microscope showed that only one division or bundle of the nerve had been severed. The cut division had separated half an inch and was united by fibrous tissue, scattered through which were found many new nerve-fibres.

Experiment No. II.—Nerve-splicing. Young Scotch terrier. Technique as above described. Half an inch of the right sciatic nerve was removed, the two ends split longitudinally for one-quarter of an inch, and flaps cut on opposite sides from each other. These flaps were then turned upon their bases and sutured. Two chromicized catgut sutures were used. The muscles and skin were sutured and the wound was closed with iodoform collodion.

On the third day the dog was walking about, but with a tendency occasionally to place the dorsum of the foot upon the ground instead of the plantar surface, as described in Experiment No. I.; otherwise the movements of the limb were normal. The wound had apparently united, and was healing kindly.

On the ninth day the left sciatic was divided one inch below the trochanter, the nerve being reached through the muscle. It was divided and united by chromicized catgut.

On the tenth day the first wound was nearly closed, although there were a few granulations at the lower extremity, but the dog was able to stand upon and to walk with the leg operated on the day before.

On the fourteenth day after the first operation both wounds were doing well. When the animal walked there was no apparent paralysis, but on running and frisking he ran upon three legs, the limb operated upon the second time being apparently shorter, but not paralyzed.

On the twentieth day the dog was walking about apparently with perfect ease and with no paralysis. Sensation was tested with a pin, but the results were uncertain.

The animal was killed on the forty-seventh day after the first operation. The silk-worm sutures in the skin were found *in situ;* the left nerve lay in its proper position. The line of union was well marked, only slight enlargement being noticed. At the site of operation the nerve was adherent to the muscle on one side, but could be dissected off cleanly on the other side. On the right side (the first operation) there was a firm cicatrix extending down to the nerve. The nerve at the seat of operation was firmly adherent to the fascia and muscle beneath. The visible ends of the nerve were apparently separated about two lines, and had slightly deviated in their course.

Microscopical Examination.—Left Nerve.—The fibres coming from above split up into a great number of fibres radiating like a fan. Below this there is about three-eighths of an inch of fibrous tissue containing small fibrils running in all directions. In this fibrous tissue many black drops of degenerated myeline are found. On the lower end of the section the degenerated myeline is all grouped together, and not scattered through fibrous tissue.

Right Nerve.—Upper end splits up into small fibrils which run in all directions in the fibrous tissue. Throughout the fibrous tissue are seen nerve-fibres running in all directions and many drops of all sizes of degenerated myeline. Apposition has not been end to end, but there has been some overlapping. No continuity of fibre can be seen in section.

Experiment No. III.—Nerve-resection. Yellow Scotch terrier; young. Technique as before. Three-quarters of an inch of the left sciatic was cut out and removed, the removed piece being at once re-inserted and sutured in position, the four ends being united with fine catgut.

On the fifth day the animal was in good spirits and walking without paralysis, but apparently the leg was a little sore.

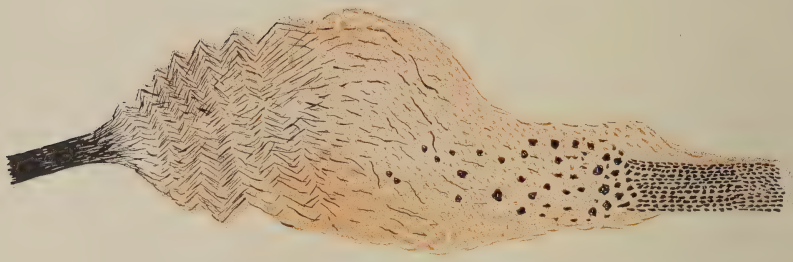


FIG. 1.—Nerve-resection; suture; left nerve. (Experiment No. I.)

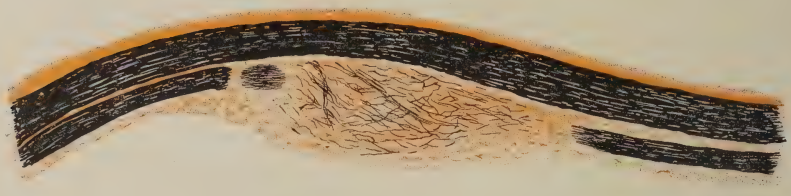


FIG. 2.—Nerve-resection; suture; right nerve. (Experiment No. I.)

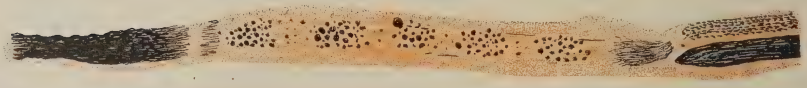


FIG. 3.—Nerve-splicing; left nerve. (Experiment No. VII.)

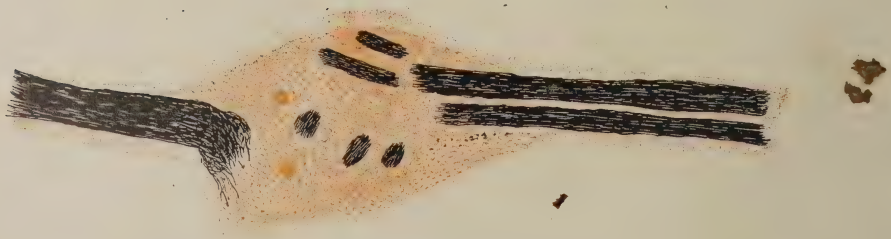


FIG. 4.—Nerve-splicing; right nerve. (Experiment No. VII.)

On the tenth day the skin sutures had given way, but the wound was clean and nearly closed by granulation-tissue.

On the fourteenth day the wound was closed except for a small ulcer at one end. He was walking without difficulty, and without paralysis, except when running.

On the twentieth day the dog could stand on his leg only occasionally, showing a little tenderness.

On the twentieth day a second operation was performed similar to that which had been done upon the right sciatic, the removed piece being at once sutured in position. One week later both wounds were perfectly healed.

The dog was killed on the forty-fourth day after the first operation. The skin was thoroughly healed, and there were no signs of suppuration. The sciatic at the seat of operation was bulbous with thickening about the line of union, while between these two bulbous portions was a bridge about one-half the size of the original nerve.

At the seat of the second operation there was thickening of the connective tissue extending for three-quarters of an inch, and included the graft at the upper and lower ends of the nerve. There was apparently firm and continuous union.

Experiment No. IV.—Nerve-flap splicing. Black Newfoundland dog. Half an inch of the right sciatic was cut away, and the nerve slit for a half-inch, commencing one-quarter of an inch from the end. Flaps were then cut upon the opposite sides, turned and sutured end to end, leaving the original ends three-quarters of an inch apart. Three days later the wound had entirely healed. The dog was walking with paralysis of the extensors of the toes and on the dorsum of the foot, in a condition of extreme equinus.

He was killed on the twenty-fifth day by chloroform. The nerve was found in proper position and adherent to the cicatrix. The continuity of the nerve was apparently entirely restored. Around the nerve was marked thickening throughout the extent. Above and below the calibre appeared to be slightly narrowed.

Experiment No. V.—Nerve-resection. Catgut bridge inserted. Small bitch pug. Technique as before. Three-quarters of an inch of the right sciatic was removed and a bundle of four strands of catgut was sutured in position. The wound was dressed as before.

On the tenth day the silk-worm skin-stitches had nearly cut through, being removed by the dog. The wound had opened and the dog was quite lame, apparently from soreness. She could walk, but the toe dropped.

On the eleventh day she was feverish and refused food, and was killed on the fourteenth day, as she was losing flesh rapidly.

Small patches of miliary tubercle were found throughout both lungs, which evidently had existed previously to the operation, as it was noticed that the animal was in poor flesh and spirits. The nerve above and below the point of section for a quarter of an inch was removed. No appearance of the catgut bridge was visible, it probably having been removed after the wound opened. There was but a slight connective-tissue bridge. The wound was still open.

Microscopical Appearances.—Upper fragment terminates in connective tissue, the nerve breaking up into fibrils. Below this there is about an inch of fibrous tissue containing groups of fibres here and there, in which the myeline is in drops showing advanced degeneration. A few muscle-fibres are found in the connective tissue. No undegenerated fibres could be found in this mass of connective tissue.

At the lower end of the section the bundle of nerve-fibres are all grouped

together, and show a beaded condition of the myeline, but apparently the degeneration is not so far advanced as that seen above.

Experiment No. VII.—Nerve-splicing; large bitch pug, old and very fat. The left sciatic was divided, and three-quarters of an inch of the nerve removed. The nerve was then slit longitudinally and the flaps turned upon their bases. One tore out and left only the upper half of the flap. This, however, was turned downward, and stitched to the upper slit half of the lower fragment.

Nine days later the wound was perfectly healed and the animal was running with ease and comfort; the toes dropped, however, and she stepped upon the dorsum when attempting to run rapidly.

Three-quarters of an inch was removed from the right sciatic, and the nerve thoroughly cleared, stitched, and sutured end to end. On the next day the animal appeared heavy and feverish, and refused water. The weather was extremely hot. The animal was very old, and on the following day, without any assignable cause, was found dead in the kennel. There were no symptoms of tetanus.

At the seat of the first operation (left) there was an irregular connective-tissue bridge, but the point from which the flap was taken had become bulbous. The flap which had been sutured showed drops of degenerated myeline, the lower nerve had become loosened, and there was irregular union. One-half of the lower fragment, which had remained undisturbed, was normal, but the other half showed signs of degeneration.

On the other side (right) the stitches were firmly in place. There was already an attempt at union, although the operation had only been done twenty-four hours. Neither upper nor lower fragments showed any change, as the time had been but two days. There were numerous small bundles of nerve-fibres which had been cut across as they lay in the new bridge of connective tissue.

Microscopical Study.—Left.—Fibres terminate abruptly in the great mass of fibrous tissue without breaking up. In this great quantity of fibrous tissue are found many patches of degenerated nerve-structure. Below the fibrous tissue—*i.e.*, upper end of lower segment—the fibres are beaded, surrounded by sheath. Degeneration here is not as far advanced as in some of the other specimens. (Fig. 3.)

Right.—No continuity of fibres demonstrable. A few bundles evidently cut in different planes. There is no splitting up of fibres and no degeneration. (Fig. 4.)

Experiment No. IX.—Resection of nerve; catgut bridge; black mongrel. Three-quarters of an inch of the right sciatic resected, and a bundle of eight strands of sublimated catgut wrapped together was stitched into the gap. On the eighth day the wound was nearly closed. The dog was walking, only occasionally dropping his toes and walking on the dorsum of the foot; otherwise he was without signs of paralysis. The animal was chloroformed and killed on the thirty-fifth day. The cicatrix was firm and healthy. The nerve was not united to the cicatrix. The divided ends were separated one inch. The upper fragment was enlarged and thickened, lying just behind the trochanter, and the connective scar-tissue around the lower fragment had retracted so that each had attached itself to the outer face of the semimembranosus. The band between the two ends was evidently connective tissue.

Microscopical Appearances.—Union is not in direct line but overlapping. Just below this point of apposition there are many spots stained



FIG. 5.—Nerve-grafting; bridge of ivory; right nerve. (Experiment No. XIII.)

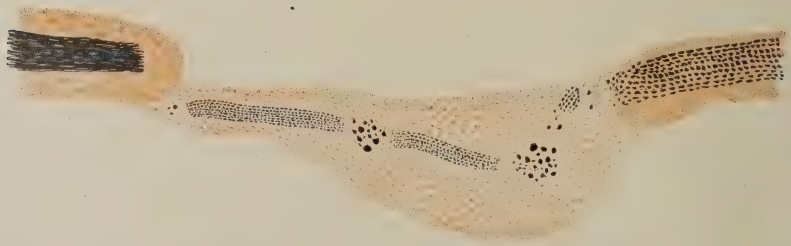


FIG. 6.—Nerve flap-splicing; right nerve. (Experiment No. XIV.)

black, but can find no nerve-fibres in these spots. This mass of connective tissue contains fat in large quantity and some muscle-fibres. Below the mass of connective tissue are found nerve-fibres degenerating.

Experiment No. XI.—Resection; insertion of another nerve; grafting; black and white setter. Resected three-quarters of an inch of the sciatic. Into this gap was immediately inserted seven-eighths of an inch of the sciatic nerve of another dog, removed under anæsthesia, while the animal was living, the second animal being then killed for another purpose. The nerve was reached through the intermuscular space behind the trochanter. The graft was stitched at either end by catgut. Six days later the wound had opened the entire extent. The animal was doing badly, and the weather was exceedingly hot; but under care, feeding with bread and milk, and removing to an open pen, the animal soon improved, and a week later was walking with only an occasional dropping of the toe and stepping upon the dorsum of the foot, but at other times the leg was moved with apparent ease. He was killed on the thirtieth day. The lower end of the upper fragment was firmly adherent to the tissue over the trochanter, the cicatrix of the integument having been brought forward and made adherent to the trochanter. The upper end of the lower fragment lay between the trochanter and the tuberosity of the ischium and was connected with the upper portion by a small bridge from the latter which merged into it.

Experiment No. XII.—Decalcified bone-tube splicing; old, black, Newfoundland dog. Three-quarters of an inch of the right sciatic nerve was resected. The ends were then drawn one-third of an inch into a decalcified-bone tube inserted into the gap, and carefully stitched *in situ.*

On the tenth day the dog seemed sick, and was losing flesh, and, as the dorsum of the foot was becoming ulcerated from pressure in walking with his toes dropping, he was killed.

The ends of the nerve were found adherent to the cicatricial tissue in the intermuscular space. The bone tube had entirely disappeared, but the loops of catgut which had been passed through the eyes of the tube were plainly visible, showing that it had not been pulled from the wound by the dog, but that it had been absorbed. The wound was entirely healed, and there were no signs of suppuration at any point.

Experiment No. XIII.—Nerve-grafting; bridge of ivory; yellow and white bitch beagle. Three-quarters of an inch of the right sciatic was removed, and a small piece of ivory of the same length, bored at each end, was inserted and stitched with catgut suture.

On the fifth day the wound had nearly closed, and it had entirely united on the ninth day. The dog was in excellent condition. He was walking without discomfort, and only occasionally upon the dorsum of his foot; otherwise motions were normal.

He was killed by chloroform on the thirty-second day. The wound was perfectly closed, and there were no signs of suppuration. The piece of ivory was found encysted and lying in the connective tissue on a plane one-quarter of an inch superficial to the plane of the nerve. The nerve-ends had separated three-quarters of an inch and were united apparently by fibrous tissue.

Microscopical Examination.—The nerve terminated abruptly in a bulb of fibrous tissue, several bundles being cut off obliquely. At the lower end of the connective tissue there is a group of black-stained drops of degenerated myeline, surrounded by a capsule of fibrous tissue. In the diagram (Fig. 5) are shown the nerve-fibres, some of them bulbous at the end, others lobulated or beaded. Some are shrunken, some enlarged.

Through the fibrous bridge are seen numerous radiating and developing nerve-fibres. While apparently straggling and without continuation, yet this may be due to improper section in preparation. Their presence shows the attempt at reunion and transmission of influence might have been perfected later.

Experiment No. XIV.—Nerve-flap splicing; black Newfoundland dog. One and a half inches of the right sciatic resected. Flaps cut from the ends, turned over, and united with catgut sutures, the flaps being end to end. Killed by chloroform on the twenty-eighth day.

Microscopical Appearances.—An irregular connective-tissue bridge connects the nerve-ends, in which are found beaded and degenerating remains of the nerve-flaps. At several points aggregations of degenerating myeline are also seen. The upper fragment does not show any attempt to send out the fan-like projections of nerve-fibres before noted. The lower fragment is degenerated. (Fig. 6.)

In Experiment I. it will be noticed that the sciatic nerve was severed, and the next morning the animal was walking about with great ease without the slightest paralysis. That union of the nerve occurred in this time I could not believe, and subsequent examination showed that a portion had been left uncut. Unfortunately, I did not see the dog after he recovered from the ether, and do not know whether he walked at once.

In cases where portions are excised, rapid union may take place by means of multiplication of the sheaths, if there is but little fatty degeneration of the peripheral ends. Experiments seem to prove not only that transmission of nerve-force is possible to be secured, but that degeneration is also prevented by suturing.

Gluck's experiments show that union in a fowl is much more rapid than in a rabbit, and more rapid in the rabbit than in the dog; therefore, in man even greater delay may be expected. Clinical facts prove that there are instances of nerve union in seventy hours in the fowl, while in man restoration is not accomplished for several weeks.

It is but seldom, fortunately, that we have an opportunity for examination, microscopically, of the effect of nerve-section in man within the first few weeks, and results, therefore, must be determined by symptoms. We are justified, however, in believing that union has occurred in the continuity of a divided nerve when there is restoration of sensation, absence of atrophy of the muscles, and the presence of contractility. Clinical records show most decidedly that union does and may be expected to occur. An inch may be excised with the expectation of good results in from six to twelve months. Clinical facts prove that the views formerly entertained by neurologists in regard to nerve-union are wrong, and that with the speedy repair obtainable by antiseptic methods reunion and regeneration are possible. Certainly we

can hope for good results with care and attention to detail, and by accurate approximation of the divided nerve and retention by fine catgut sutures.

Suture of a nerve after many months of separation of the divided ends may result in restoration of the functions, even if there is no resultant continuity of the axis-cylinders; to apply one axis-cylinder absolutely to its original is impossible. Even if no nerve-union takes place, nerve-regeneration seems slowly to occur, as axis-cylinders are formed, with later deposit of myeline, as has been accurately described by Neuman.

Howell and Huber,[1] in a careful and most comprehensive study of the subject, have entered into the physiological, histological, and clinical study of both regeneration and degeneration of nerves.

Their investigations were undertaken especially to learn, first, whether union and return of function of severed nerves without degeneration of the distal portion is possible, and, secondly, whether union is possible with return of function between the central portion of any one special nerve and the distal portion of another of opposite function. They have traced the various experiments from Cruikshank in 1795 to the present time, and point out the errors of interpretation in various experiments.

In regard to pseudo-motor activity of sensory nerves they offer only the explanation of Heidenhain, that it is caused by an increased secretion of lymph, which acts as a stimulus to the partially-destroyed plates of the muscle-fibres, as, for instance, through the chorda tympani fibres of the lingual. They believe also that the experiments of Reichert and Schiff need further confirmation, as sources of error in interpretation are quite possible. They conclude that although the peripheral end of one spinal nerve can unite with the central end of another with return of function, yet that there are no completely satisfactory experiments showing that a pure motor trunk can unite with a pure sensory trunk with return of function to the peripheral portion. They agree with many observers that the myeline disappears after section, and that segmentation begins simultaneously throughout the peripheral end, in accordance with the testimony of the majority of investigators. The preponderance of evidence seems to be on the side of those who hold that the axis-cylinder degenerates along with the myeline.

If we accept the modern view that the axis-cylinder is an enormously elongated process of a nerve-cell, it would follow as a matter of course that this process when severed from its parent cell must degenerate. As to the process of degeneration of the primitive sheath, they are not able to state accurately.

Union by first intention, simple and absolute, end to end, without degeneration, cannot be proved; but immediate and rapid return of function has certainly been demonstrated too often for its possibility to be denied. Whether this immediate return is through direct transmission across the minimum amount of space, or whether the restoration of the parts to their

[1] Journal of Physiology, 1892, vol. xiii. No. 5 (Mitchell Prize Essay).

normal positions in some way assists other trunks in taking up the function of the injured nerve, is still uncertain.

Those who maintain that new axis-cylinders arise directly from the old ones of the central end have never been able positively to demonstrate their belief.

Their conclusions are:

1. That primary union of a nerve without degeneration of the peripheral end does not occur.

2. The time of degeneration varies, complete loss of irritability being usually present in from two to four days in dogs, showing that the degenerative process commences early.

3. The return of irritability and conductivity in a peripheral end after union was noticed at the end of twenty-one days, and it varies at later periods of time, being nearly complete in the majority of cases at the end of eleven weeks. This return of function begins first in the neighborhood of the wound and extends slowly centrifugally, although the branches do not improve in regular anatomical order.

4. Return of sensation antedates that of motion, as has been frequently noted by other observers.

5. Mechanical stimulation is sometimes more effective than electrical in producing reaction.

Their experiments upon dogs were chiefly upon the median and ulnar nerves. Their work did not come under my observation while I was experimenting, and I selected the sciatic for my purposes of study, with the result that paralysis occurred more frequently and was more noticeable than would have been the case in the front leg of an animal. A dog gets on very well with two hind legs and one front one. They examined their nerves by teasing, not by section, and found that degeneration occurred simultaneously throughout the entire extent of the distal segment.

Etzold shows that regeneration begins at the central end and travels slowly down the course of the nerve.

Howell and Huber report that of eighty-four primary sutures forty-two per cent. were successful, forty per cent. improved, and eighteen per cent. received no benefit. Howell criticises the reports of Bowlby and of Gluck in the so-called cases of primary union, since no careful electrical tests were made.

Arloing and Tripier have shown that rapid return of sensation can occur without union, and that the movements of muscles can be executed without the presence of the nerve immediately distributed to the muscle.

In two cases of so-called primary union, one by Bramwell, the hand was at once examined and there was no loss of sensation or motion. It was attributed by the surgeon to the fact that nerve impulse could pass when the ends were in close apposition, just as an electrical current can pass by contact. But it has been very definitely proven by physiologists that nerve-impulse cannot travel when the axis-cylinder is interrupted.

In Kraussold's case return of motion and sensation was very rapid: within forty hours impulses were transmitted, although union could scarcely have taken place in this time.

Reichert[1] published interesting demonstrations upon regeneration of nerves. While sensory fragments frequently unite with sensory fibres and motor fibres with motor fibres, he attempted to change the function of a nerve by resecting it and uniting the vagus and hypoglossus.

Vulpian and Rosenthal had attempted to unite the motor fibres of the hypoglossus with the sensory fibres of the lingual, but they did not obtain union of the sensory with the motor fibres.

Vulpian and Philippeau[2] united the central end of the vagus with the peripheral end of the hypoglossus, but did not find any properly-regenerated fibres in the hypoglossus trunk, or other normal nerve-fibres in which the medullary sheath was developed; they regarded regeneration as independent of reunion.

Other experiments have been undertaken to show that after regeneration of nerves the different trunks which were united in the animals were still able to perform their original co-ordinate movements.

Reichert had the hypoglossus cut close to its exit from the cranium and the vagus at the thyroid. The peripheral end of the hypoglossus was sutured with silk to the central end of the vagus. Microscopical examination later of the hypoglossus trunk showed that it contained degenerated fibres and a large number of small fibres in the medullary sheath, proving that the motor fibres of the vagus had actually become united to similar filaments of the hypoglossus, and that the hypoglossus fibre conveyed impulses which were peculiar to the vagus. In one case he found that sensory-fibre irritation of the hypoglossus trunk produced effects like those induced by excitation, thus showing that motor and sensory nerves can convey impulses peculiar to another motor or sensory nerve of entirely different function. He calls attention also to the fact, as shown by Bert's experiments, that sensory fibres can convey impressions in both directions. This Bert proved by grafting the tail of a rat upon the animal's back, and, after union had occurred, severing the tail from its normal connection and then transmitting sensation in the reverse direction.

With regard to the process of regeneration which takes place in favorable cases after division and regeneration of a nerve, there has been a difference of opinion among investigators. Korybutt-Daskiewicz[3] has described it thus: "After liquefaction of the old medulla in the central end there occurs the formation of new myeline with the peculiar appearance that between the two former constrictions one or two new ones are formed. The nuclei of the sheath of Schwann also undergo changes in the central end

[1] American Journal of the Medical Sciences, January, 1885.
[2] Lancet, September 21, 1878.
[3] Gaz. des Hôpitaux, 1861.

near the division of a nerve; they swell up, become surrounded by granular protoplasm, and, after becoming separated from the fibres, assume an elongated form, whether finally developing into nerve-fibres cannot be definitely ascertained. The axis-cylinders in the peripheral part break up into more or less numerous fragments during segmentation of the medulla, and of these some apparently liquefy and participate in the same changes as the myeline, while others persist and clothe themselves with a new medullary sheath. Before the degeneration of the myeline begins to lessen, the fragments of the axis-cylinder commence to lengthen in each direction, and the nuclei existing within the sheath begin to elongate and lie at certain distances from each other. Simultaneously with this process the new medullary sheath makes its appearance as a varicose or uniform deposit upon the axis-cylinder. Thus the fragments of the axis-cylinder remaining serve as a starting-point for a new endogenous formation of nerve-fibres. They present no tendency to blend with one another, but remain in contiguity, growing in the same general sheath close to one another, and ultimately after the disappearance of the old sheath of Schwann they develop into independent fibres. Hence, at a certain time there is the appearance as of several nerve-fibres in a single sheath."

Benecke[1] and Bakowiecki state that the nuclei of the sheath can be seen multiplying, elongating, and forming an axis-cylinder by joining each other in the long axis of the nerve, the medullary substance of the sheath of Schwann being applied around this new cylinder.

Leegaard claims that regeneration starts in the protoplasm within the sheath in the neighborhood of the nuclei, fine grayish threads becoming differentiated in the interannular segments and running together into a continuous fibre.

Gluck describes the union as occurring by means of an elongation of the already multiplied nuclei, the myeline and sheath of Schwann being formed later.

It seems almost certain that from the nuclei of the sheath new axis-cylinders are formed. The oval and spiral-shaped nuclei seem to be identical structures with the nuclei of the sheath. They arrange themselves in bundles parallel with the nerve-trunk. This elongation finally becomes transformed into fibres around which the myeline of the sheath arranges itself. In old cases, when regeneration has not taken place, the nerve-fibres disappear, and are replaced by connective tissue.

Bowlby's conclusions are:

1. That the nuclei of the sheath of Schwann (which are developed from epiblast) form the new axis-cylinders.

2. That the myeline is subsequently formed around the new axis-cylinder.

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[1] Bowlby, Injuries and Diseases of Nerves, 1889, p. 23.

3. That the peripheral end may become regenerated without forming any union with the proximal extremity, but that it again tends towards degeneration if union fails.

Microscopical Conclusions.—Howell concludes that the degenerative changes and the subsequent regeneration take place as follows:

a. Segmentation of the myeline and axis-cylinder at the intersegmental lines.

b. Proliferation and migration of the internodal nuclei.

c. Secondary fragmentation and absorption of the myeline (and the contained *débris* of the axis) most active in the neighborhood of the nuclei.

d. Increase of protoplasm around the nuclei, forming, finally, a continuous band of protoplasm lying in the old sheath.

e. Formation of a new sheath in the periphery of the band, thus making an "embryonic fibre."

f. Union of the embryonic fibres of the peripheral end with those similarly formed in the central end; the union taking place in the intervening cicatricial tissue.

g. Formation of myeline in the peripheral end as isolated drops, usually seen first near the nuclei. These afterwards unite to form a continuous tube. The formation of the myeline proceeds centrifugally, starting from the wound.

h. The outgrowth of new axes from the old axes of the intact fibres of the central end, the outgrowth following quickly upon the development of the myeline.

i. In the central end, especially when connection with the periphery is not made, several new fibres may form within the sheath of an old one to take the place of the portion degenerated. Each of these may develop myeline and receive a branch from the axis-cylinder above.

A careful review of the above experiments and a study of the microscopical appearances as exhibited in the figures clearly demonstrate that—

1. Functional restoration is possible.

2. The closer the apposition the more speedy and complete will be the restoration.

3. Union is accomplished chiefly by the reaching out and development of nerve-fibres from the divided proximal end, these fibres pushing their way across the connecting link of fibrous tissue. The fan-like projection of these fibres is marked in each case.

4. Engrafted nerve-tissue or flaps cut from the nerve may serve as a framework for new tissue, or may produce embryonic nerve-fibres capable of assisting in reunion.

CARDIAC DYSPNŒA.[1]

BY ALFRED LEE LOOMIS, M.D., LL.D.,
New York City.

Six years ago I read a paper before the New York State Medical Society on *paroxysmal* dyspnœa in certain forms of heart-disease. I desire at this time to modify some statements then made, and to add some recent observations on this subject. On an etiological basis, dyspnœa may be divided into four varieties. If it arises from obstructions in the larynx, it may be designated *laryngeal dyspnœa;* if the obstruction is in the bronchial tubes, *bronchial dyspnœa;* if in the structure of the lungs, *pulmonic dyspnœa;* if from arrest in the passage of blood through the heart to the lungs, *cardiac dyspnœa.*

In very many of those valvular diseases of the heart, which are accompanied by hypertrophy and secondary dilatation, dyspnœa is a prominent symptom. Under such circumstances, however, the dyspnœa is of gradual development, is often, and indeed usually, more or less persistent, and depends rather upon the secondary pulmonary changes than directly upon the cardiac lesion.

In the form of dyspnœa which I now propose to consider, the difficulty of breathing is due entirely to a cardiac condition, which allows of temporary slowing or permanent arrest of the blood-current in the heart. In this condition there are no organic changes within the lungs, bronchial tubes, or larynx to obstruct the entrance of air to the alveolar surfaces. Under whatever cardiac condition this form of dyspnœa may arise, it has this one essential cause,—viz., a temporary or permanent arrest of the blood in the heart, a condition which evidently must be only temporary or speedily terminate in death. When distinct valvular changes are present with consequent hypertrophy and secondary dilatation, a gradually-developing chain of symptoms precede and give warning of the approach of the more serious conditions. But when, on the contrary, the entire history is one which does not direct attention to the heart, and when even a physical examination shows few if any signs of cardiac disease, it is quite possible, and it often happens, that the exact nature of the case is not detected or the changes which attend it fully appreciated. It is just because it is so commonly the result of obscure changes in the arteries and cardiac walls rather than to valvular lesions of the heart that I wish to emphasize its importance, and invite attention to its more complete study.

Often when there have been severe attacks of cardiac dyspnœa during

[1] Read before the American Climatological Association, May, 1893.

life, with no appreciable physical signs of disease in the chest, or any evidence of arterial or renal disease to account for their occurrence, the autopsy will reveal advanced fatty or fibroid changes in the cardiac walls, with dilatation of the heart-cavities, and there will be found in the ventricular cavities, especially in the right, large exsanguinated clots, which are so interlaced with the chordæ tendineæ of the tricuspid valve as evidently to interfere with the blood-current through the heart during the last few hours or, perhaps, days of life. Occasionally the heart-cavities will be found distended with blood in diastole, when more or less complete obstruction of the coronary arteries will be the only lesions to account for the sudden death.

From recent and more extended studies I am led to the belief that these dyspnœic attacks rarely terminate fatally, even when extensive degeneration of the heart-walls exists, unless associated with *arterial* changes, especially in the walls of the aorta; and I am more and more of the opinion that the mild as well as the severe anginal attacks which we are accustomed to attribute to heart-failure depend rather on the aortic changes than on the cardiac, although we usually find the two conditions associated at the autopsy. In two instances where an attack of dyspnœa terminated fatally, the autopsy revealed obstruction of the coronary arteries as the only cause of death.

When extensive cardio-vascular changes exist the attacks of dyspnœa may be brought on by very slight exciting causes, and may be repeated frequently before a fatal result is reached. In such cases some new obstacle is usually found within the heart-cavities to obstruct the passage of blood, and to so embarrass the already feeble heart that it cannot recover itself. A frequent cause of death under such circumstances is the formation of exsanguinated fibrinous masses which become entwined around the chordæ tendineæ of the tricuspid or mitral valve. It seems probable in such cases that during the stasis of blood in the ventricles, which results from their imperfect and feeble contraction at the commencement of an attack, cardiac thrombi are formed, and as the heart partially recovers itself the filaments of fibrin become separated and interlace themselves with the chordæ tendineæ. The curtains of the valves are thus held in the valvular opening, and there results a complete arrest of the blood-current through the heart, which causes sudden death. In a few instances I have found both the right auricle and the right ventricle filled with exsanguinated coagula, which sent prolongations into the pulmonary artery and obstructed the blood-current to the lungs. I have a specimen where death occurred suddenly on the third day of an acute lobar pneumonia, in which a thrombus entirely filled the cavities of the right auricle and ventricle, the heart being in other respects healthy. In every case of cardiac dyspnœa terminating in death which has come under my observation, and where I could obtain an autopsy, there was unmistakable evidence of a mechanical arrest of the circulation in the heart, either from failure of its contractile powers or from obstruction of blood in its passage through the heart by fibrinous masses in its cavities.

Usually the arrest is in the right heart, and as a result the blood is shut off from the pulmonary artery. The lungs under such circumstances will be not only free from congestion but more or less bloodless, while the other internal organs will be found intensely congested. If the obstruction is in the left heart, the blood-current will be arrested in its passage to the aorta; then the lungs will be intensely engorged, and the other internal organs will contain less than their normal amount of blood.

It seems to me reasonable to assert that the primary or predisposing cause in all cases of true cardiac dyspnœa is a gradual failure in the contractile power of the heart,—a failure of the mechanical force of the circulation; the exciting cause of the dyspnœic attack is anything which causes the heart-failure to reach such a point as practically or completely to arrest the cardiac circulation. Thus, when all the necessary factors exist, mental shock, excessive physical exertion, violent passion, or sudden fear may act as the excitant to the attack of dyspnœa. These excitants may differ widely from each other, for a feeble heart may be stopped as readily by a call for stronger action, which it is not prepared to meet, as by suddenly cutting off its blood-supply or obstructing its nutritive vessels. During the relaxation of the physical forces which comes in the early hours of the morning after profound sleep, when the heart in perfect health has its minimum propelling-power, is the period in the twenty-four hours when the dyspnœic attacks are most likely to occur. Often subjects will awake about four in the morning in the midst of a severe attack of dyspnœa.

A stomach distended from flatulency or any other cause produces in a healthy person little inconvenience beyond a sense of fulness or slight pain, but, when a distended stomach presses on the diaphragm in one with cardiovascular disease, the inspiratory movements become impeded, the pulmonary circulation is embarrassed, and the enfeebled heart enters on a struggle for which it has no reserve power, and a more or less severe dyspnœa is the result. A fully-developed attack usually comes on with a sense of constriction across the chest, which is immediately followed by a gasping for breath, accompanied by spasmodic contractions of the respiratory muscles. The surface of the body becomes pale and cold, the countenance extremely anxious, and the patient, if the attack is not too severe, is constantly changing his position with the hope of obtaining relief. Painful muscular spasms often occur in the voluntary muscles in different parts of the body. The mind remains clear, the pulse becomes feeble, irregular, and intermittent, and frequently there will be a prolonged absence of the radial impulse. This form of cardiac dyspnœa presents a peculiarity in the relation of pulse to respiration as distinguished from all other forms of difficult breathing, —*i.e.*, that the return of the pulse precedes instead of follows the subsidence of the dyspnœa.

The symptoms which precede an attack, or what may be called its preliminary symptoms, are few, but they are diagnostic. One of the earliest and most constant, and one which may exist for months, perhaps

years, before the occurrence of a fully-developed attack, is an occasional sinking or exhausted sensation in the præcordial region. This sensation will come on from very slight causes, such as sudden physical exertion or strong mental emotion. At first a diffusible stimulant, a few swallows of hot water, or the recumbent posture will relieve it. In some instances the patient will complain of a choking sensation, commencing in the cardiac region and passing rapidly to the pharynx, which comes on immediately after taking food, or at the moment of falling asleep, when it is often very oppressive, and, to nervous subjects, alarming. So-called dyspeptic symptoms often accompany it: sooner or later there will be established an irregularity in the cerebral circulation, indicated by attacks of vertigo, headache, hissing sounds in the ears, and occasional dimness of sight. For a long time these symptoms may cause the patient no serious inconvenience, but eventually a series of obscure nervous phenomena will develop; he will become irritable, melancholic, and perhaps hypochondriacal, and he will very likely be treated for neurasthenia, or perhaps congestion at the base of the brain. At length, attacks of faintness with pallor will occur, and the patient will be troubledwith insomnia, his mental faculties will be disturbed, and slight physical exertion, such as going up-stairs, will cause breathlessness. In one who presents these symptoms an attack of cardiac dyspnœa is liable to occur at any moment.

The physical signs, if the general symptoms are well marked, are usually distinctive: the cardiac impulse is feeble and difficult to locate; there is usually an epigastric tremor; the heart-action is irregular in force and rhythm although the patient may not be conscious of its irregularity. The first sound of the heart is short and valvular in character, and during periods of great cardiac irregularity it is difficult to distinguish the first from the second sound. In the majority of cases there are no cardiac murmurs, and no evidence of valvular insufficiency. There will be an entire absence of any pulmonary or laryngeal changes sufficient to produce the general symptoms, and an examination of the urine will usually give negative results.

These patients become exceedingly anxious about themselves, and will consult one physician after another without obtaining more than temporary relief, until a severe attack of dyspnœa occurs, when little can be done to avert a fatal issue.

SOME OF THE TOXIC EFFECTS OF TOBACCO ON THE GENERAL ORGANISM, WITH ESPECIAL REFERENCE TO ITS EFFECTS ON THE EYE.[1]

BY GEORGE P. HALL, M.D.,

Lecturer on Diseases of the Ear, Nose, and Throat, Medical Department of the University of Texas, Galveston.

Let us consider the toxic elements of tobacco as generally used, and the method of consumption, which induces the greatest development and absorption into the system of these poisonous principles. The main elements produced in the combustion of tobacco are nicotine, nicotianine, and some ammonia and saline elements; of these, nicotine is pretty well conceded as being the chief toxic agent.

Poisoning may be produced in various ways, as smoking, chewing, snuff-using, and by working in close, ill-ventilated tobacco-factories.

Of the various methods of use smoking is beyond question the most noxious, though Wood,[2] in an interesting article on Toxic Amblyopias, gives it as his opinion that chewing is the worst. The use of cigarettes is probably of all methods the most objectionable, from the fact that the smoke is oftener inhaled, and the quality of the tobacco is inferior. The systemic effects of tobacco can be divided into two classes, the direct and the indirect. According to Bosworth,[3] the ammonia and the saline elements of tobacco have the direct effect upon the mucous membrane of feeble stimulants and irritants. He thinks the local or direct effect upon the upper air tract (throat and nose) is largely overrated. Huchard,[4] in his admirable lectures, has given a very able and exhaustive study of the chemistry and physiological action of tobacco. He thinks that the chief effect is produced on the medullary nerve-centres, and speaks pointedly of the "irritable heart" of smokers. He says, "This action of tobacco," alluding to its effect in producing functional cardiac disturbances, "is usually ascribed to its effect on the nervous system in general, and the pneumogastric in particular, but this is not all; much is due to its action on the muscular system in general, and particularly upon the vascular walls. Tobacco is not simply a cardiac poison; it is also an arterial poison. The vaso-constrictive action of nicotine has been thoroughly demonstrated. It produces disturbances in various organs. The nerve-centres show signs of ischæmia; cerebro-spinal irritations, headaches, with vomiting, morning fatigue, im-

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[1] Read before the Galveston County Medical Society.

[2] Annals of Ophthalmology and Otology, 1892.

[3] New York Medical Record, 1891.

[4] Annual of the Universal Medical Sciences, 1890.

pairment of memory, psychical irritation, inaptitude for work, and even transitory aphasia. The respiratory apparatus may exhibit disturbances attributable to contraction of the pulmonary vessels. The diuretic effect of the tobacco is also explained by this hyper-arterial tension; but it is upon the heart itself that the most deplorable effects of this vascular tetanization are produced. Certain attacks of angina and disturbances of rhythm may be ascribed to spasm of the coronary arteries, and consequent ischæmia. The hard, small tobacco pulse is also explained by this vaso-constrictive action." The effects of tobacco, when past the physiological limit, are very wide and far-reaching, and may fall in some degree on any one or more of the nerves or nerve-centres of special sensation. Of these, we are oftenest confronted with affections of the visual apparatus. I have seen no allusion at any time to the possible independent existence of involvement of the nervo-muscular apparatus of the eyes from tobacco. And yet if we accept the pathological views of Huchard and others, why may this not take place? That such cases as muscular asthenopia from tobacco poisoning do occur, I believe to be a fact, and later on will give the history of a case which I think will satisfy all doubts.

It was long maintained, and with considerable warmth, that pure tobacco amblyopia did not exist; that so-called cases were really the effect of the alcoholic element in the intoxication or the blending of the two elements. I think this view was held not many years back by even so eminent an authority as Sir Jonathan Hutchinson. But to-day the existence of pure tobacco amblyopia is recognized, and the cases which I present are selected because I have been able to eliminate from consideration in their causation every other element but tobacco.

Tobacco amblyopia is classed pathologically as a retro-bulbar neuritis, with "atrophy succeeding to inflammation of the axial fibres of the nerve."[1] The principal ophthalmoscopic signs are a slight but distinct haziness of the nerve and adjacent retina, and well-marked atrophic pallor of the infero-temporal quadrant of the nerve. Loring[2] maintains that the atrophic stage is usually preceded by a congestive stage, and I believe that view to be the correct one. The disease usually shows a central blind spot for colors, and often for form, or, technically speaking, color and absolute scotomata. The periphery of the visual field may be in rare cases contracted. The chief symptoms complained of are clouded vision for distance, with inability to read, together with a perhaps recognized difficulty in distinguishing colors. The prognosis is usually good, but most cases improve slowly, and require persevering treatment. The usual method of treatment adopted is as follows: First, discontinue the use of the toxic agent; not gradually, but at once and completely. Tonics may be required, and among them strychnine is pre-eminent. I customarily use the nitrate hypodermatically, beginning

[1] Noyes's Diseases of the Eye.
[2] Loring's Text-Book of Ophthalmoscopy.

with the one-fortieth of a grain once or twice a day, increasing gradually to the point of physiological tolerance, and maintaining the dosage slightly short of that point. It is a well-known fact that strychnine is capable of stimulating temporarily even the normal retina to such a degree that its visual acuity is increased. I have also received valuable assistance from the use of a mild galvanic current. The negative pole should be applied to the nucha, and the positive to the closed eyelid. A two-minutes *séance* once a day is sufficient for each eye. The exhibition of pilocarpin will in some cases yield excellent results.

I have selected the following cases for purposes of illustration:

Case I.—Mr. H., aged forty-eight, consulted me August 10, 1890, complaining of inability to use his eyes for any great length of time. He said that on reading he saw clearly for a while, then suddenly the type would fade from view. On resting and rubbing the eyes he would be able to resume reading, but the eyes would pain him if he continued reading. Examination revealed myopia 2. D. each eye, for which patient wore correcting glasses; vision normal, with color-perception unaffected; muscular balance not disturbed; no lesion visible with the ophthalmoscope; health otherwise good, except that he complained of being unable to think connectedly on any subject, and seemed at times to be in a state of mental confusion. This man was not a drinker, but consumed from ten to fifteen cigars daily. My diagnosis at the time was accommodative asthenopia, although the range of accommodation was good for one of his age. I ordered the daily use of a myotic to tone up the ciliary muscles. Improvement was followed by a relapse, whereupon I decided to test the question of the possible influence of tobacco in producing the trouble, and stopped its use, the result being that the trouble entirely disappeared in a few days. Later on he resumed the use of tobacco, when the asthenopia returned, only to disappear again on removal of the cause (tobacco). The abnormal mental state was also entirely dissipated. This case was very instructive to me, as it involved the existence of a form of eye trouble which I shall designate as tobacco asthenopia, and which, so far as I have been able to discover, has not been reported before. This would seem to prove incontestably that the nerve-centres which send impulses to the ciliary muscles can be affected in tobacco-poisoning independently of other involvement of the visual apparatus.

Case II.—Ed. J., by profession a lawyer, aged thirty-seven, complained of deafness and a constant ringing noise on left side. Otoscope revealed a retracted drum-membrane slightly reddened, freely movable on drum-inflation. H. D. R. $\frac{24}{24}$, normal; H. D. L. $\frac{1}{24}$, improved to $\frac{3}{24}$ by inflation. Rhinoscopic examination revealed simple chronic rhinitis, accentuated in vault of pharynx, and especially around the opening of the left Eustachian tube, accompanied by hypersecretion. No adenoids. Mr. J. was a smoker, and consumed a dozen pipes or more per diem. He was treated as follows: The affected naso-pharyngeal area was first cleansed with a direct spray of warm Dobell's solution, followed by warm vaseline spray with eucalyptol in suspension. This was subsequently changed to three-per-cent. spray of camphor menthol in heated vaseline. The drum-cavity was inflated, and he was advised to cut down his tobacco to one-third his usual amount. This treatment was continued for some time, with the result of increasing H. D. L. to $\frac{7}{24}$; but past this point I could not get it. The tinnitus was lessened, but far from relieved. The inflammation in the neighborhood of the Eustachian tubes was stubborn, though somewhat improved. Nitrate of silver was applied locally, with no better results. I now ordered the tobacco discontinued entirely, to see if by any possibility it might be the obstacle in

the way of success. Shortly improvement began; in one week tinnitus entirely disappeared, and in two weeks H. D. R. improved to $\frac{20}{24}$. The relation of cause and effect in this case was so clear that comment is unnecessary except to note the fact that the cause and action once set in motion, even a reduced quantity of tobacco will cause it to persist.

Case III.—Captain James M., aged fifty-nine, consulted me first in March, 1890, on account of indistinctness of vision and inability to read. He remarked that he was particularly troubled with a difficulty in making out figures in red ink, and finally was unable to see them at all. On examination found V. with R. E. $= \frac{12}{200}$, brought to $\frac{20}{100}$ by — S. 3.00 D.; V. with L. E. $\frac{20}{200}$, brought to $\frac{20}{100}$ by — S. 1.25 D. Vis. fields were perfectly intact, except a small oval central scotoma for red, which was found in each. Ophthalmoscopic examination revealed only a slight pallor of both disks. Captain M. was a smoker, but eschewed intoxicants entirely. Treatment: stop the use of tobacco; nitrate of strychnine hypodermatically, beginning with one-fortieth of a grain, increasing to one-eighth daily (muriate of pilocarpine also had a good effect in this case), and a mild galvanic current of two minutes daily, to each eye. In three months I found V. with R. E. brought to $\frac{20}{30}$ by — S. 3.00 D.; V. with L. E. brought to $\frac{20}{30}$ by — S. 1.25 D. The color-blindness had disappeared, and the patient was once more able to resume business, his vision subsequently proving perfect with proper correcting glasses.

Case IV.—Mrs. R., aged forty, the mother of several children, consulted me on November 25, 1890, on account of failing vision. I will narrate the symptoms in the patient's own language. She says, "About five years ago my eyes began to trouble me; there was no pain, but it seemed as if there was a thin veil before the sight; the right was worse than the left. There were bright flashes and streaks like lightning before my eyes. I became very nervous and childish; would sit and cry half my time, without any cause whatever. While suffering no pain, I could not sleep; was restless and despondent, and had no desire to live." Mrs. R. also suffered from functional cardiac derangement, palpitation, etc.; pulse small and hard. She used no wines nor liquors of any kind, but made the following remarkable statement: "I am never without a snuff-brush in my mouth at any time in the twenty-four hours, except when taking my meals, for I even sleep with it between my teeth." Examination revealed V. with R. E. = Nil; V. with L. E. $= \frac{20}{200}$, brought to $\frac{20}{70}$ by + S. 1.25 D. Ophthalmoscope showed complete atrophy of R. papilla, with decided atrophic pallor of temporal half of the L. Vis. field was not contracted, but showed a good-sized central scotoma for red, green, and blue. The patient received the same treatment as Case III., and, while the result was good in L. E., it was accomplished after a much longer time. June 10, 1891, V. with L. E. brought to $\frac{20}{20}$ with + S. 1.25 D.; patient bright, cheerful, and has entirely regained her health. This case presents some very unusual features and points of great interest. 1. It occurred in a female. 2. The toxic effects of tobacco were induced by snuff alone. 3. The very rare occurrence of absolute atrophy of one nerve, along with the fact of total extinction of vision in one eye, the disease being less than half advanced in the fellow eye.

Dr. Wood says, in his article previously referred to, "I have not been able to find the report of a case where amblyopic symptoms were developed by snuff-taking;" but adds, "a few cases are on record, however." I have had, in an experience of twelve years in which I have treated numerous cases, this single case of tobacco amblyopia due to snuff-taking, and have as yet heard of no other in the experience of my colleagues in this region, many of whom are older in the practice of medicine than myself.

A CASE OF MALE HYSTERIA CHARACTERIZED BY RECURRENT ATTACKS OF MOTOR APHASIA AND LETHARGY; APPARENT CURE BY HYPNOTISM AND SUGGESTION.[1]

BY THEODORE DILLER, M.D.,

Visiting Physician to the Insane Department of St. Francis Hospital; Physician to the Neurological Department of Pittsburg Free Dispensary, Pittsburg, Pennsylvania.

THE published accounts of cases of hysterical aphasia are but few and are to be found widely scattered in the literature upon this subject. Lethargy is also a very uncommon hysterical symptom, but is pretty well recognized as such.[2] I can, however, find reference to no case in which both aphasia and lethargy presented themselves as hysterical symptoms in any single individual. The following case is, therefore, so far as I can learn, unique.

M. B., aged thirty-seven; teamster; married; father of three children; has always been healthy; never sick a day in his life; never drank much, and for several months past has abstained from all alcoholic beverages; denies specific history. For some weeks past he has been out of employment and has in consequence been worrying a great deal. He fears that the "hard times" will never terminate. It has been said that he exhibits a violent temper when provoked.

He came to the Pittsburg Dispensary in the latter part of October, 1893, complaining that his voice would leave him upon certain occasions. The symptom had occurred, for the first time, one month before. Since the initial attack he has had four or five similar attacks each week, the shortest being three hours in duration, the longest lasting one-half day. They are always the same in character, but may occur at any time in the day. There are no warnings of an approaching attack. He only knows that an attack has begun by finding, upon making an effort, that he cannot talk; in like manner he knows that an attack has ceased only by finding that he can talk. Aphasia came on upon several occasions when he was about to solicit work, causing him much embarrassment.

During the attacks he is unable to utter a single word. He knows what he wants to say, is entirely conscious, makes an effort to utter the words in his mind, but with total failure; he recognizes all familiar persons and objects about him, and comprehends as well as at any other time all that is said in his presence. He can read and write during an attack as

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[1] This case was briefly referred to by the writer at a meeting of the Philadelphia Neurological Society, held December 26, 1893.

[2] See cases reported in *Brain*, vol. xvi. p. 203, 1893, by Professor Hitzig, and winter number, 1893, by the writer.

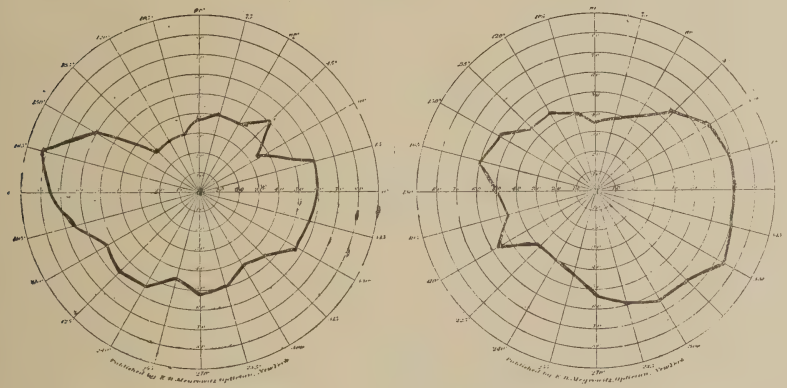
well as he could before the onset of this trouble. After close questioning he declares that he knows of no excitants which will bring on or terminate an attack.

Present State.—Physically the man is fairly well developed, rather stout, and shows upon casual observation no evidence of disease. Mentally he is dull, stupid, almost feeble-minded. He is a great believer in magic, relics, etc. States that he has great confidence in the efficacy of the blessing he recently received at a convent in this city.

There is very evident dulling of pain-sensation all over the body. A pin-prick sharp enough to draw blood does not cause him to withdraw the injured part, although in slow drawling tones he states that "it hurts a little bit." There is a corresponding diminution of acuity of tactile sensation. There are no areas of absolute anæsthesia; no hyperæsthesia; no hysterogenic zones. No motor impairment.

Dr. Joseph E. Willets, who kindly examined the patient's eyes, tells me that the visual field for form was taken with great difficulty on account of the man's stupidity and a slight existing ptosis. The resultant map shows a distinct contraction of the field for both eyes. Dr. Willets

Fig. 1.



Left visual form field. Right visual form field.

is of the opinion that this contraction is more apparent than real, as there is a distinct though slight contraction of the visual field of both eyes. Ophthalmoscopic examination discovered a marked paleness of both optic disks. The visual acuity was somewhat sharpened (V., O. D. $\frac{20}{20}$; O. S. $\frac{20}{15}$). The condition of the optic nerve is not, at present, one of atrophy. The possibility that it may represent the beginning of atrophy cannot, however, in the opinion of Dr. Willets, be wholly set aside.

I learned, upon inquiry, from the man's relatives that he was always dull, stupid, and simple-minded, although he had never been regarded as insane. He performed simple manual work very well and worked very faithfully when he had employment.

It will, I think, be conceded that no organic disease could produce the

symptom-complex noted in this case. The recurring attacks of aphasia would in themselves strongly indicate that the case is one of hysteria; but for corroborative evidence we have to note two significant hysterical stigmata, viz., anæsthesia and concentric contraction of the visual fields. The somewhat suspicious appearances of the eye-grounds are scarcely sufficient to overthrow the diagnosis.

A more debatable question would be as to whether the case is one of hysterical aphonia, of hysterical mutism, or of hysterical aphasia. As the case presents the exact clinical symptoms of aphasia, and lacks the symptoms of apparent muscular involvement seen in the other two affections, I think it can be more properly called hysterical motor aphasia.

I hypnotized the man two or three times, inducing a condition of drowsiness or light sleep. Frequent suggestions were made to him, both before, during, and after the hypnotic sleep, that he would get well very soon; that in a short time his difficulties in talking would entirely disappear. Electricity and internal medication were given him, with the hope of producing some favorable psychical effects, but up to the time I lost sight of the man (he was under my care only two or three weeks) these measures had produced no appreciable change in the number or character of the attacks.

The foregoing account of the case, with the remarks which follow it, had been written about December 1, some few weeks after the patient had ceased visiting the dispensary, and when I had supposed that I should probably not see him again; but in the latter part of November the man was admitted to St. Francis's Hospital in the service of my colleague, Professor McKennan, who was good enough to permit me to continue my observations upon him. When I first saw the man at the hospital he had been there about two weeks.

He entered the hospital with the history that for two or three weeks before he had been having spells, on alternate days, in which he would lie stiff, "like dead," upon the floor for two or three hours. During these two weeks or longer he clung to the idea that there was a stoppage in his throat or gullet which prevented food from entering his stomach. In consequence of this delusion he had eaten but very little, for it is useless to eat, he said, when food cannot enter the stomach. His physical condition bore witness to the fact that he had eaten but little, for he was very much emaciated, and presented a striking contrast compared with his physical condition a few weeks before. During the two weeks he was in the hospital before I saw him he was having "spells" on alternate days. These consisted in attacks of lethargy which came on suddenly, lasted two or three hours, and terminated suddenly and completely. During these attacks attempts to rouse him, such as shouting, pushing, etc., were futile (harsh measures and painful stimuli were not employed). Since his admission to the hospital he had, through forced feeding, received a proper amount of food.

When I first saw him in the hospital—which was in the afternoon—he complained to me of the stoppage of the passage-way, and said that food

could not enter his stomach. I assured him, with as confident a manner as possible, that he would surely get well, and very soon at that. I took him to the clock and said, "After to-morrow at ten o'clock you can never have another 'spell' such as you have been subject to." The assurance seemed to give him comfort. Since that day he has never had another attack of lethargy. Repeated suggestions by myself and others about him that the difficulty of food entering his stomach would disappear resulted, in the course of a week or ten days, in the entire disappearance of that delusion. He began to eat better, and finally grew to have a voracious appetite, and in consequence rapidly gained flesh. He brightened up mentally, and became cheerful, even buoyant in spirits, and was a few weeks later discharged from the hospital apparently cured.

Both of the suggestions made at the hospital were, at my request, frequently repeated by the hospital interne, Dr. Conners, and the nurses, so that the man was, so to speak, surrounded by or in an atmosphere of helpful suggestions. In view of the failure which attended the suggestions when the patient first came under my care, and the striking success which attended their subsequent employment, I cannot help feeling that the difference in results was largely due to this "atmosphere of suggestion."

I have for a long time thought that the reason that Christian Scientists, Faith Healers, etc., often obtain, through suggestions, results which cannot be attained by reputable physicians, is due to this "atmosphere of suggestion" which the individual enters when he applies for relief to one of these psychological gymnasts.

The fact that suggestions alone produced such prompt beneficial effects when, upon a previous occasion, suggestions coupled with hypnotic sleep or drowsiness had produced no effect whatever, lends support to the view that the essential part of hypnotism, from a therapeutic stand-point, is the suggestion.

Another point worthy of note is that the suggestion was made that the lethargic attacks could not occur after a certain definite time, while in the matter of the difficulty in the food entering the stomach the suggestions were made in an entirely diffierent way; he was simply, though repeatedly, assured each day that he was better, and was rapidly getting well. The suggestions with regard to the lethargic attacks were made positive, and a definite time was appointed beyond which they could not recur, as it was desired to produce, if possible, a striking result, and thus render the patient more susceptible for subsequent suggestions; besides this, the suggestion was made in an interval between attacks, and the effects were not immediate. In the matter of the persistent idea that food could not enter the stomach because of a stoppage of the passage-way, it seemed to me that an attempt to take the man away from this idea suddenly or harshly might result in failure, because the idea was ever present with him, as he spoke of it constantly. So I thought it would be better to impress him gradually, as such a course would be more likely to result in success.

As regards the diagnosis, if the case could be properly called one of hysteria before the appearance of the lethargic attacks, and the persistent idea with regard to swallowing, it could, with double assurance, be called such after the appearance of these symptoms. The question arises as to whether the persistent idea concerning the stoppage of the passage-way to the stomach was an hysterical symptom or a delusion which stamped the possessor as insane. Gowers says,[1] "A patient . . . who believes that his throat is hermetically closed is insane, not hypochondriacal." Such a belief as this patient possessed does, indeed, of itself, seem to be a delusion of insanity; yet the fact that all the other symptoms in the case were hysterical, that two of the permanent stigmata of hysteria were present, and especially that the delusion in question passed away, evidently as the result of suggestion, all stand in evidence to show that, in spite of Gowers's dictum, the symptom in question in this case was an hysterical one. That hysteria may merge into insanity I am not prepared to dispute. This patient's condition might be regarded as one on the border-line between hysteria and insanity. If this view be held, it must at least be conceded, I think, that the dominant features of the case were those of hysteria; but from whichever side the case may be looked upon, it was, after all, one of insanity, within the meaning of the law, so far as the man's detention in an asylum is concerned.

THE RACE FACTOR IN DISEASE AS ILLUSTRATED BY PNEUMONIA IN THE NEGRO.[2]

BY J. WELLINGTON BYERS, M.D.,
Charlotte, North Carolina.

MODERN etiological investigation has succeeded in ascertaining and defining the exact scope and influence of a number of the predisposing conditions and causes of disease, though there remain still others to be interpreted and their limitations assigned. In respect to the agencies of class, climate, occupation, and environment in general, we possess considerable accurate and useful data. As regards the influence of the subject-factor of race, with its concomitants and peculiarities of tissue, structure, and use, upon the advent, type, and sequence of morbid phenomena, much remains to be studied and understood. Up to this time no systematic efforts have been made to ascertain the *spécialité* of disease as it occurs in the various races and nations of the world. This is true in view of the fact that some

[1] Diseases of the Nervous System, vol. ii. p. 1337.

[2] A paper read before the Section on Diseases of Children, Pan-American Congress, Washington, D. C.

maladies are shown to be far more formidable in character and results in one people than in another. From an examination of the mortality statistics of the negro contingent of the population of this country, I find a number of diseases in which their death-rate is excessive as compared with that of the whites in the same localities. This is true not only in regard to the inhabitants of this country but also very generally wherever the negro is an element in a mixed population. Such being the case, we find ourselves confronted for a solution of this very grave problem. Hence the question may be asked, is it possible, aside from age, sex, class, occupation, climate, and other well-recognized contributing conditions of disease, that we possess a distinct and ascertainable factor in the one of race, by virtue of which one stock of people manifest proclivities to disease from which others are exempt? In other words, are the unusual tendencies towards scrofula and consumption and other allied diseases shown by the Saxon people the result of inherent racial characteristics or the product of the circumstances of life and environment? Is there a race diathesis? Are the Semitic people prone towards cancer and melancholia, and exempt from communicable disease to a degree evidencing almost a charmed life, because of peculiarities of organization of anatomical form and physiological reactions? In the light of facts furnished by the experiments made in relation to the causes and conditions of immunity and susceptibility, this appears to be the case.

Indeed, it is fair to assume that all people of different stocks will differ as much physiologically as they do morphologically, yet it is very difficult, in the absence of definite knowledge, to demonstrate and affirm, in any particular case, how much the supposed racial trait is due to original and inherent peculiarities and how much to the effects of other circumstances, such as environment. There are considerable facts, however, to show, for some diseases at least, that fluctuations do not follow from a change of environment, but that the trait manifests itself even after the change. This does not conflict with those experiences that show how potent the external conditions of existence are in modifying internal states and determining for or against disease. We know that every organism tends to become adapted or acclimated to its condition of life, and that all the structures of a species accustomed for ages to the climate, soil, food, and various other influences of a given locality, are moulded into harmonious co-operation favorable to life in that locality, the result being that in the development of each young individual the tendencies conspire to produce a fit organism. It is otherwise when the species are suddenly or rapidly removed to a habitat of an opposite character. The Eskimo will perish from consumption if removed to Copenhagen, although a few centuries back he was of the same Scandinavian stock. The negro, when taken from Africa and kept awhile, will succumb to malaria, which at first he withstood almost entirely. In these transitions the organs become partially out of harmony with the demands of the new life, and partially out of harmony with one another, and in this way the perturbed relations of the organs interfere with their original equilibrium

and prepare the way for disorganization and disease. In substantiation of the assertion that race is a distinct element in the etiology of disease, I have chosen pneumonia to illustrate it, and ask your attention to a few statistics in this connection.

Many years since, Austin Flint, in his work on the practice of medicine, noted the frequency and malignancy of pneumonia among the negro race, and said, "In sections of the Southern States pneumonia prevails at times sufficiently to be considered as endemic, and, affecting the negro population, often proves the scourge of the sugar and cotton planter." Reynolds's "System of Medicine" says, "In certain sections, as in Sierra Leone, the Cape, and Mauritius, the negro race appears to suffer more than the whites." Hirsch, in his monumental work on the history and geography of disease, says the same holds true in regard to the South American countries, and adds "that, while immigrants from northern latitudes to subtropical or equatorial regions enjoy comparative exemption from pneumonia, the natives of the tropics, and most of all negroes, are subject to the malady in a peculiar degree, not merely when they go to colder climates, but also in their natural habitat." Pruner Bey says the negro is excessively liable to pneumonia in Cayenne, and that the malignancy of the pneumonia of the desert is appalling in its fatality among them. Observers very generally admit the fatality of this disease in Soudan, Zanzibar, and the west coast of Africa. From these statements it is seen that climate or geographical position has little or nothing to do with this disease in the negro. Place or situation appears to be of little moment, since for them the mortality is equally excessive. In my own personal experience I have been impressed with the unusual susceptibility and fatality among these people when attacked. They appear to succumb rapidly, and pass at the first into a stage of apathy.

Dr. Billings, in summing up his conclusions in regard to the data furnished by the tenth census, says, "The evidence furnished by the census does not favor the theory that this disease is dependent upon climate or cold." Statistics from European countries substantiate this also, and we find pneumonia as prevalent in Spain, Italy, France, and Greece as in Russia and Norway and Sweden. In all Europe the average death-rate from pneumonia is fifteen per one thousand of the population, the same as in the United States. In the census we find the mean death-rate from pneumonia among the whites to be 108.88, while among the negroes it is one hundred and forty-two in each one thousand deaths from all causes. In the States of Louisiana, Missouri, and Arkansas the death-rate among the blacks from this disease reaches one hundred and forty-six per one thousand deaths, the rate being in rural regions 152.8, and in cities and towns one hundred and eleven, per one thousand deaths. These figures, taken in their totality, show unmistakably an excessive mortality in negroes as compared to the whites. The data come from a considerable portion of the earth's territory, and embrace almost every clime. The fact being established, the question may be asked, what is the cause of this marked fatality? The bacteriology and

pathology of pneumonia have been very clearly made out, though what constitute the special conditions that determine susceptibility have not been determined. In a general way we may speculate that there must be some anatomical defect leading to corresponding physiological incompetence of the cells and tissues engaged as the factors of vital resistance to the pathogenic agencies of this disease in the negro. Whether this be an absence or defect of leucocytosis, as has been shown to be the case in fatal instances of pneumonia, remains to be investigated and shown. My chief purpose has been to awaken some interest in the much-neglected department of ethnological medicine, if I may so use the term. In my contributions to Buck's "Reference Handbook," and Keating's "Cyclopædia of the Diseases of Children," as well as in a number of journal articles, I have endeavored to treat the subject of the race factor in disease at more length. I trust that this paper may be the means of arousing further interest in this connection, and that we may be enabled to fathom some of the difficulties which surround this unexplored though vitally important domain. A gross comparison of the physiological characteristics of the white, yellow, and black races suggests a higher and lower form of organization, though variations in skin, hair, size and shape of skull and face do not afford an explanation of these diversities of disease, and we must pass beyond these to still finer and more subtle peculiarities of tissue and cells as the ultimate causes of differences in vital resistance or exemption from disease. Investigation may discover and interpret the nature of these.

RHINOLITHS.[1]

BY HARRISON ALLEN, M.D.,

Professor of Zoölogy and Comparative Anatomy, and Director of the Wistar Institute of Anatomy and Biology, University of Pennsylvania.

Case I.—Miss M. A., aged twenty-eight, reported January 6, 1894, complaining of offensive odor of the breath, which had been the subject of solicitude with her from childhood. The amount of discharge was moderate in amount, not requiring the use of more than two or three handkerchiefs a day, and the offensive odor was more apparent to the patient than to any other person. She had been under the care of many physicians, and gave the names of four practitioners who had either given an opinion, or had had the patient under care for periods varying from a week to several months. One of these physicians stated that there was really nothing the

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[1] Read before the Section of Otology and Laryngology of the College of Physicians of Philadelphia, February 6, 1894.

matter, and that the patient was suffering from hypochondriasis; others pursued treatment by varieties of sprays, washes, etc., but without relief.

I found both nasal chambers much narrowed anteriorly, to such a degree, indeed, that a view beyond the vestibule was not obtained. Cocaine was carefully applied, but it was evident that the narrowing was not membranous. As is always my custom in such conditions, I recommended that the front part of the chambers be opened by digital divulsion.[1]

This procedure was accomplished on the left side, it being the narrower chamber, on January 14, 1894. The patient reported January 16, and I detected a substance, whitish in color, which looked like the anterior edge of an old nasal polypus far back in the nasal chamber. A careful study of this region convinced me that the mass, instead of being of the character of a polypus, as I had at first supposed, was in reality a concretion. I could seize it with the forceps, and found it freely movable, but it was too large to be brought forward through the nostril or pushed back into the pharynx. It was also observed that everywhere the mass, except at the anterior edge, was black in color. Not being sure of its exact nature, and none of my instruments being strong enough to make any impression upon it, I made no further attempt to remove it at that sitting.

On January 23 I succeeded in breaking off a portion with a pair of stout forceps, and a little while afterwards a large piece fell into the throat. The following day when the patient again reported she brought a second portion, which had also been removed by falling into the throat shortly after leaving my office.

The symptoms of which the patient complained were immediately relieved.

Submission of a small portion of the body to the action of dilute nitric acid produced effervescence, and the conversion of the fragment to a soft, mucoid mass. I infer from this that the mass is calcareous, and apparently belongs to the group of rhinoliths. The concretion measured thirty millimetres in one diameter and twenty-five in another. It was eight millimetres thick at its thickest part. The weight of the largest piece, after becoming dry, is 1.743 grammes; total weight, 2.43 grammes.



* Rhinolith from Case I. Supposed position of the fragments (natural size).

This case is instructive from several points of view,—first, that physicians of ability and experi-

[1] Digital divulsion consists in forcing the tip of the little finger in the nostril on the level of the floor of the nose, or as near to it as is possible. Ether is administered in the first stage. The advantages claimed for this procedure are: 1. The increase of diameter of the nasal passage not only in the vestibule, but in many cases in the entire length of the nasal chamber. 2. A more free depletion of over-distended vessels than is possible in any other way. It is well to divulse each chamber in separate sittings, if the procedure be essayed in the office.

ence attributed to the imagination the presence of what was, in truth, a large rhinolith in the nasal chamber; second, that a condition ordinarily easy of diagnosis was made difficult by undue narrowing of the anterior part of the nasal chamber; when this condition was overcome, the cause of distress was readily detected; third, it is possible for a large calculus to remain for many years in the nose, and yet produce but slight irritation.

Case II.—Mr. J. L. L., aged thirty-six, a highly cultivated man and a minister, reported May 9, 1893. He complained of constant dropping of mucus from the upper to the lower part of the throat, which interfered with the professional use of the voice. A history of a blow on the nose in the twelfth year was obtained. During a residence in San Francisco the patient had been treated by a physician who employed a drill in opening the left nasal passage. There had been for a long period violent morning cough, accompanied with expectoration of mucus, which was tenacious and often colored with products of suppuration. I removed a small bony spur from the left nasal chamber. On the following day the patient brought several rounded masses, the size of buck-shot, white in color, which appeared to be rhinoliths. On May 12 a second mass was brought down into the throat and preserved. I need not detail the separate instances in which these small, round concretions were expelled. I assume that altogether from May 9 to June 17 as many as twelve were brought to me. Unfortunately, these specimens were mislaid, and are no longer to be found. By the nitric-acid test they were shown to be calcareous in nature, and appeared to be productive of irritation, for from the date last named all catarrhal symptoms ceased, the natural character of the voice being restored, and the morning cough disappeared.

This case is less satisfactory than the foregoing, since none of the alleged concretions were removed by a medical man. Indeed, they were of a size permitting them to be thrust up the nasal passages by a person who wished to court notoriety or to excite sympathy. I gladly state that I never suspected this gentleman of any intention to deceive.

Nasal concretions, I assume, are rare. The large number of cases so far reported do not militate against the strength of this position; for the fact that the masses are infrequently met with in practice naturally induces practitioners to record their observations.

Apart from the fact that small foreign bodies serve to favor the deposition of the salts, little is known of the etiology of the bodies. True rhinoliths, as distinguished from foreign bodies which are more or less encrusted with calcareous deposit, are more apt to form in a narrowed nasal passage, though it is evidently the case that other associated causes are necessary, or they would be oftener met with in practice.

TISSUE METABOLISM IN CHLOROSIS.[1]

BY CARL VON NOORDEN, M.D.,

Privatdocent at the University of Berlin and First Assistant to Professor Gerhard.

So short a time has elapsed since the publication of my work entitled "Lehrbuch der Pathologie des Stoffwechsels," that but little has been added to our knowledge of this subject beyond a few points bearing upon the therapeutic side of the question.

I have chosen the subject of "Tissue Metabolism in Chlorosis" for to-day's consideration, and at another time shall consider how far the knowledge gained from such a study of tissue metabolism is applicable to the treatment of this disease.

I.—THE CAUSE OF THE POVERTY OF THE BLOOD IN HÆMOGLOBIN.

This is due to (1) increased destruction or (2) diminished new formation of the coloring-matter of the blood, or (3) a combination of the above-named processes.

Physicians, as a rule, have assumed that the chief factor in the faulty formation of the coloring-matter in chlorosis is the diminished formation of blood. For this I could adduce many references from both the old and the new works upon this subject. On the other hand, opposite views have been held; for instance, the famous pathologist, J. W. Bencke,[2] has expressed himself thus: "The development of the female sexual organs, which sometimes occurs rapidly, sometimes slowly, causes reflex disturbances of the organs presiding over the absorption and elaboration of food. These disturbances cause either insufficient absorption or insufficient oxidation or too abundant loss of iron. This causes, notwithstanding that sufficient iron has been introduced, a gradual impoverishment in iron, and as more red blood-corpuscles are being destroyed the blood loses hæmoglobin." You will observe in this rationale of Bencke many fantastic and hypothetical ideas, as indeed are often noticed in Bencke's writings.

We, to-day, are accustomed to enter much more deeply into the scientific questions of the doctrine of tissue metamorphosis than was possible in Bencke's time. We are, indeed, astonished at the profound thoughts of this

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[1] One of the lectures delivered before a private class at Berlin. Translated by Dr. Carl Frese, of the German Hospital, Philadelphia. A second paper, by the same author, entitled "The Dietetic Treatment of Chlorosis based on Tissue Metabolism," will appear in the May number of the INTERNATIONAL MEDICAL MAGAZINE.

[2] Pathologie des Stoffwechsels. Berlin, 1874.

man; but we come to the conclusion that the quantity of knowledge at that time available was in reality too scanty to justify the publication of so voluminous a monograph on the "Pathology of Tissue Metamorphosis." The second author I shall cite is the well-known Sir Andrew Clark,[1] of London. He says, "Chlorosis is caused by constipation, and, consequently, by absorption of the resulting ptomaines." These poisons are said to be injurious to the blood and effect an increased destruction of hæmoglobin. The French author Hanon holds essentially the same opinion.

All these are theories, for none of these authors have either directly or indirectly proved that increased decomposition products get into the blood from the intestines. Clark, indeed, refers to excellent results obtained in the treatment of chlorosis by purgatives, but Ralph Stockman[2] has justly pointed out that Clark's purgative prescription contains large quantities of sulphate of iron (eight grains daily), and that the curative effect is probably due to this addition.

I hope you will not require me to criticise other works. We always come to the conclusion that not one positive sign is known which proves that in chlorosis more hæmoglobin than normally is destroyed. On the other hand, we have some very distinct points which lead us to the assertion that in chlorosis the normal quantity at the utmost, probably, however, very much less, of hæmoglobin is destroyed. This follows from the behavior of hydrobilirubin (synonyme, urobilin).

At the present time it can be distinctly stated that bilirubin and its near relatives are derivatives of hæmatins, and that the quantity formed in the body is directly proportional to the quantity of hæmatins used up. We never find, as is well known, apart from stagnation of bile, true bilirubin in the excreta, but only its relatives, chiefly hydrobilirubin.

Whether there exist several kinds of hydrobilirubin, and where it is formed, I will not discuss in this place. I will only briefly state that I think it tolerably sure, after the researches of Fr. Müller,[3] that only the liver produces bilirubin, and that all its hydration products (hydrobilirubin) are formed by reduction processes in the intestines, from whence they are excreted partly with the fæces and partly after absorption with the urine. If many derivatives of bilirubin are found in the fæces and the urine, excluding stagnation of bile, then the destruction of hæmoglobin is large; if little is found, then the destruction is inconsiderable. But now recall to your minds the very pale urine of chlorosis and the light color of the fæces, which sometimes is so pronounced as to be very similar to the fæces of jaundice, which do not contain any hydrobilirubin (v. Jaksch[4]). Macroscopical observation, however, does not prove anything. On further

[1] Anæmia or Chlorosis in Girls. Lancet, 1886, ii. 1003.

[2] Brit. Med. Journal, May 6, 1893.

[3] Ueber Icterus. Verhandlungen der schlesischen Gesellschaft für vaterländische Cultur, January 15, 1892.

[4] Klinische Diagnostik, p. 252, 3d edition, 1892.

investigation it will be found that the chloroform extract of urine and fæces gives only slight traces of hydrobilirubin. In making quantitative tests, which however presupposes much practice, this decision is further affirmed. G. Hoppe-Seyler[1] and A. S. Garrod[2] found in the urine of chlorosis, at the utmost, the normal quantities,—indeed, as a rule, less than this. I, myself, can affirm this, and may add that the diminution of hydrobilirubin in the excreta of chlorosis is more distinctly demonstrated if not only the urine is examined, but if simultaneously the daily quantity excreted both in the urine and in the fæces is tested.

These considerations seem to prove quite distinctly that we have no right to assume an over-copious destruction of hæmoglobin, and therefore only this conclusion remains—the cause of the poverty in hæmoglobin is to be sought in the faulty new formation of the blood. Indeed, it even seems to follow that the body of a chlorotic is extremely careful, even more so than normally, in using up hæmoglobin as a compensation for insufficient hæmatopoietic function.

Now, allow me to make one remark, which, however, can only make claim to the designation of an hypothesis. I am of the opinion that a conspicuous poverty in hæmoglobin of the individual blood-corpuscles, as it is the rule in chlorosis, can never be produced by destructive agencies, but must always be explained by anomalies in the formation of blood. Some restricted exceptions exist in anæmia caused by copious acute hemorrhages and by acute nephritis. In these conditions the blood plasma is so diluted (œdema of the blood) that the blood-corpuscles swell up (Herz[3]), and therefore appear relatively poorer in hæmoglobin. On the other hand, we find in all those processes which induce much destruction of hæmoglobin (infectious diseases, numerous intoxications), principally a destruction of cells (erythrolysis).

II.—ON THE ABSORPTION OF IRON.

In our time, which measures all therapeutic successes with a most critical standard, the efficacy of iron in the treatment of chlorosis has, too, been often considered as very questionable. It, however, is very significant that these doubts have originated more from the physiologists and pharmacologists than from practising physicians and clinicians. These doubts were caused in consequence of experiments on animals and a few observations on man. It was found, after the administration of iron preparations, that the iron in the urine was not increased, and the conclusion was, therefore, arrived at that no iron at all was absorbed. Some of our most famous physiologists

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[1] Ueber die Ausscheidung des Urobilins in Krankheiten. Virchow's Archiv, cxxiv. 30, 1891.

[2] Hæmatoporphyrin as a Urinary Pigment in Diseases. Archives of Pathology, i. 195, 1892.

[3] Ueber Blutkrankheiten. Virchow's Archiv, cxxxiii. 339, 1893.

and pharmacologists (Bunge,[1] Kober[2]) have expressed such views, and their weighty opinions have caused this doctrine to be widely adopted. Some even went further and have drawn the conclusion, which, as I mentioned above, is manifestly wrong, that iron is useless anyhow. This was opposed by Bunge, who promulgated a compromise theory, which was hailed with considerable approbation. He holds that only such ferruginous nucleo-albumins as are found in the egg, in milk, and in grain-seeds are absorbed. In normal conditions these ferruginous nucleo-albumins of our food suffice to supply the iron which the body needs; in chlorosis, however, increased decomposition takes place in the intestines, in consequence of which much sulphuretted hydrogen is evolved; this precipitates the iron from the nucleo-albumins, converting it into sulphuretted iron. If, under such conditions, inorganic or organic iron compounds are administered, the sulphuretted hydrogen combines with these bodies and leaves intact the iron of the nucleo-albumins, so that they can be absorbed without interference.

This theory is indeed very sagacious and is worth careful examination. It is, however, wrong if the following data can be proved:

1. No more decomposition processes (albumin decomposition) take place in the intestines of chlorotics than in normal individuals; and,

2. Even sulphuretted iron is therapeutically active.

Nobody has produced positive proof that the decomposition of albumin is increased in the intestines of chlorotics. All that has been written by Bunge and others on this subject is purely hypothetical. I, therefore, had Dr. Rethers,[3] of San Francisco, work up this question. He examined the percentage of ethylsulphuric acids in the urine (indoxyl, phenol, skatoxyl, etc., sulphuric acids), as these acids are always increased in the urine if the decomposition of albumin in the intestines is excessive (Baumann). It follows from the researches of Rethers, which were made in eighteen cases of pure grave chlorosis, that the ethylsulphuric acids, as a rule, are not increased in the urine, but rather that they are present frequently in conspicuously small quantities, and that in those cases in which they were increased, special complications of the intestinal canal, which had nothing to do with the causation of the chlorosis, were also found. A further result was noticed, —that the decomposition of albumin in the intestines is not influenced by preparations of iron. The researches of Mörner[4] in the mean while have also affirmed these results.

The therapeutic action of sulphuretted iron has been examined by Ralph Stockman.[5] He demonstrated the important fact that sulphuretted iron produces the same beneficial effects on the blood and the general condition

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[1] Lehrbuch der physiologischen und pathologischen Chemie, 2d edition, 1893.

[2] Arbeiten aus dem pharmakologischen Institut in Dorpat, Part vii., 1891.

[3] Beiträge zur Pathologie der Chlorose. Dissert. Berlin, 1891.

[4] Zur Frage der Wirkungsart der Eisenmittel. Zeitschr. für physiol. Chemie, xviii. 13, 1893.

[5] Brit. Med. Journal, May 6, 1893.

as the other salts of iron. Stockman's researches are excellent and seem to me worthy of full credit.

This disproves the theory of Bunge; other reasons, however, make it unnecessary, for in the mean while it has been proved that iron salts are indeed absorbed, and that not only nucleo-albumins containing iron possess this faculty.

The history of this proof is very interesting. First, it was recognized that iron which gets into the blood-current (subcutaneous injection) is not at all excreted by the kidneys (Jacobi[1]), but accumulates in the liver and spleen,—these organs, magnet-like, attracting the circulating iron. They are the warehouse of the body for superabundant iron. The iron is given out very gradually by these organs, and is removed by the intestinal juices from the body. The intestinal mucous membrane is the place of excretion for the iron and not the urine, which is capable of removing only a few milligrammes. After this has been established there is no cause for wondering why the percentage of iron in urine is not influenced after iron has been administered; it became evident that it had been an error in judgment to assume from that fact that the iron salts are not absorbed.

So far the labors of Quincke,[2] Zaleski,[3] Jacobi,[1] Stender,[4] and others had advanced this question; still the positive proof that iron was absorbed remained wanting. This deficiency has been removed by the researches of Gottleib[5] and Kunkel[6]; the former fed dogs, the latter mice, with iron salts, and both found at the post-mortems of the animals the liver rich in iron, much more so than in animals which had not been fed in the same manner. This proves the absorption of iron, and an old dispute has been settled forever.

III.—TO WHAT IS THE CURATIVE EFFECT OF IRON DUE?

The answer how the iron salts which are absorbed act as remedies has, however, not been given. Is it true that the body of a chlorotic is wanting in the atoms of iron around which the hæmoglobin molecule can be built up? Is it just the correction of this deficiency which immediately mends everything? I, indeed, consider this very improbable, for we must constantly bear in mind that every girl developing chlorosis takes up in her usual food more iron than is required by even the most extravagant esti-

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[1] Ueber das Schicksal der in das Blut gelangten Eisensalze. Archiv für experiment. Path. und Pharm., xxviii. 256, 1891.

[2] Zur Pathologie des Blutes. Arch. für klin. Med., xxv. 567, 1880, and xxvii. 194, 1880.

[3] Zur Frage über die Ausscheidung des Eisens. Archiv für experiment. Path. und Pharm., xxiii. 317, 1887.

[4] Mikroscop. Unters. über die Verteilung des in grossen Dosen eingespritzten Eisens. Stuttgart bei Enke, 1891.

[5] Ueber die Ausscheidungs-Verhältnisse des Eisens. Zeitschr. für phys. Chemie, xv. 371, 1891.

[6] Zur Frage der Eisen-Resorption. Pflüger's Archiv, l. 1, 1891.

mate, but the iron she gets in her food is exclusively contained in nucleo-albumins. There is no doubt that the healthy organism takes up iron from the nucleo-albumins and employs it for the manufacture of hæmoglobin. Why does not the chlorotic patient make use of the nucleo-albumins which are supplied so abundantly in the food? Is the absorption worse?

The following pages will show that the absorption of food in chlorosis is excellent; it would be an insane speculation if it were assumed that chlorotic patients absorbed most excellently all the other constituents of food,—*i.e.*, albumin, fat, carbohydrates,—to the exclusion of the nucleo-albumins. The only rational point of view had been taken by Bunge, and he has been proved wrong. We, therefore, must assume that chlorotic patients absorb ferruginous nucleo-albumins,[1] but do not make use of them. Why do they not make use of them? We remember the fact (Section I.) that the formation of blood in chlorosis is faulty, and therefore we must arrive at the view that it is faulty function, a diminution of the energy of growth in the hæmatopoietic organs (bone marrow) which causes that they leave unutilized the ferruginous nucleo-albumins which are brought to it by the blood. So far I think I have not left positive ground and the conclusions to be drawn therefrom. Now, however, hypothesis is justified, and I put the thesis that the iron salts circulating in the blood effect a stimulation on the hæmatopoietic cells of the medulla of the bones, and that the result of this stimulus is an amelioration of the constitution of the blood. On the other hand, the nucleo-albumins, containing iron, which are circulating in the blood, only exert a very weak stimulus on the bone-marrow, and therefore medical practice has long since gained that experience that in the treatment of chlorosis any iron salt is much more effective than those ferruginous nucleo-albumins (hæmoglobin, hæmotogin, hæmogallol, etc.) which pure theorists have attempted to foist on the profession. There is no doubt a good deal may even be accomplished by these combinations; they may be irritants to the medulla of the bones, but they are not as useful as the ordinary iron salts, as has been again shown only quite recently by Stockman.

I find much support for the theory just stated from our experience with arsenic. I, myself, in out-patient practice, have treated numerous cases of chlorosis with large doses of arsenic (0.008 gramme per day), and have had good results. Yet I have apparently had greater success when combining iron and arsenic. This treatment seems to gain more and more popularity—less on theoretical basis than purely from practical experience. Indeed, we hear that in health resorts with carbonated ferruginous springs of old-established renown the resident physicians do not recommend the local waters to their lady patients, but advise the mineral waters of Levico or Roncegno, which contain iron and arsenic.

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[1] The question which formerly existed whether the nucleins are absorbed as such has now been answered affirmatively by positive proofs by Gumlich. Ueber die Aufnahme der Nucleine in den thierischen Organismus. Verhandl. der physiol. Gesellsch. in Berlin, November 10, 1893.

The curative effect of arsenic has always been considered to be due to the stimulation it exerts on the hæmatopoietic organs, and that it has nothing to do with the building up of the hæmoglobin molecule. The same explanation was not allowed for the action of iron because the chemical relationship of hæmoglobin and iron was always referred to a factor which obscured, as I think, the true state of affairs. According to my judgment the body of chlorotics is not wanting in iron, but there is not sufficient energy of growth and generative force of the organs forming blood-corpuscles. All that we consider true of arsenic we may transfer without hesitation to iron. Both, indeed, are substances closely allied chemically, and, as Binz[1] has taught, they exert on the cells an effect only quantitatively different.

IV.—ON THE ABSORPTION OF FOOD IN CHLOROSIS.

I have already pointed out that it is of importance, when deciding certain theoretical questions, to know how the patients suffering from chlorosis absorb food.

Up to a short time ago little was known about the digestive functions in chlorosis. At the time when the importance of animal experiments was overrated, the experiments of Manassein[2] were adduced, who observed that after large venesections hydrochloric acid in the stomach was either not at all excreted or else in insufficient quantities. The devotees of animal experiments had transferred this observation directly to the conditions in chlorosis, and, indeed, had based on it a special therapeutic procedure,—namely, the administration of large doses of hydrochloric acid in chlorosis (Zander[3]). Now, however, it has been found[4] that this belief was erroneous, as has been proved partly by works from Riegel's and Leubi's schools, partly by French and Italian writers. Indeed, it was discovered that in chlorosis much more frequently rather too much (hyperaciditas hydrochlorica) than too little hydrochloric acid is secreted; but there does not seem to exist a definite rule in this respect. Besides, it was known that chlorotic patients frequently suffer from constipation, and that in some rare cases the fæces contained numerous fatty crystals. Further, as the fæces were frequently pale, it could be concluded that less biliary coloring matter was excreted (see above); about the other constituents of the bile, however, nothing was known. Those experiments are, of course, of special importance which take notice of the composition of the food and the fæces, after

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[1] Vorlesungen über Pharmakologie, 2d edition, Berlin, 1892.

[2] Ueber den Magensaft bei fiebernden und acut. anaemischen Thieren. Virchow's Archiv, lv. 413, 1872.

[3] Virchow's Archiv, lxxxiv. 117, 1881.

[4] Ulcus ventriculi und dessen Beziehung zur Chlorose. Dissert. Giessen, 1890. Procentnale und absolute Acidität des Magensaftes. Zeitschr. für klin. Medizin, xx. 232, 1892. Ueber die Acidität des Magensaftes bei Chlorose. Dissert. Wurzburg, 1891.

careful analysis, and by which thus is gained an insight into the quantities absorbed.

Such experiments have been made in very pronounced cases of chlorosis by Wallerstein,[1] under the direction of Friedrich Müller, and by Lipman-Wulf,[2] under my guidance. The result is clear after looking over the following table:

Name of Author.	Daily Food in Grammes.			Loss by the Fæces in per cent. of the taking in.			Duration of Experiments in Days
	Dry Substance.	Nitrogen.	Fat.	Dry Substance.	Nitrogen.	Fat.	
Wallerstein	347	16.46	39.26	4.70	7.1	12.6	6
Lipman-Wulf ...	441	12.88	85.86	5.08	7.5	4.9	7
Lipman-Wulf ...	448	13.06	98.47	4.80	6.4	5.0	7
Lipman-Wulf ...	483	12.78	93.65	5.59	9.2	5.4	5

These figures teach that no more dry substances—nitrogen and fat—were found in the fæces than would have been the case in quite normal individuals. Only the figure of the loss of fat in the first experiment (12.6 per cent. of the amount taken in) seems somewhat large at the first glance; but that is not so, for the quantity of fat given was small in this case (only 39.26 grammes per day); and I could show you a large number of observations in healthy people which teach that when small quantities of fat are given the percentage of loss in the fæces is large, and reaches the figure found above.

We therefore learn that the absorption—*i.e.*, the total work done by the digestive tract in chlorosis—is, as a rule, excellent, and that those cases are exceptional where matters do not take this course, and ought, most likely, to be considered as due to special complications.

V.—ON THE DECOMPOSITION OF ALBUMIN IN CHLOROSIS.

It is known that in acute losses of blood in leukæmia and in pernicious anæmia, the disintegration of albumin is increased,—*i.e.*, these patients destroy more albumin, and therefore excrete more urea, than is the case with healthy people under the same conditions of nutrition. In other words, they become poorer in albumin, the protoplasm of the cells being lost. I have always held the view that the increased disintegration of albumin in pernicious anæmia and leukæmia is not the consequence of the anæmia, but must be explained by the presence of poisonous substances which attack the protoplasm. For in acute anæmia after hemorrhage much toxic substance cannot be considered as causative; other factors play a *rôle* here to which Pflüger[3] has lately drawn attention, and into which I cannot enter here.

[1] Beiträge zur Kenntniss der Chlorose. Dissert. Bonn, 1892.

[2] Ueber Eiweiss-Zersetzung bei Chlorose. Dissert. Berlin, 1892.

[3] Ueber einige Gesetze des Eiweiss-Stoffwechsels. Archiv f. d. ges. Phys., liv. 333, 1893.

I, however, may add by way of parenthesis that the doctrine of an increased disintegration of albumin after acute hemorrhages does not hold good for the human subject, so far as my observations go; whether it is applicable to dogs, or whether even in those animals the facts ought to be thoroughly revised, is of no interest here. This question might be solved by the veterinarians.

It is clear that in chlorosis we can very successfully examine whether or not chronic anæmia, *per se*, increases the disintegration of albumin. If it should be found that in grave chlorosis, with much decreased hæmoglobin of the blood, the disintegration of albumin is not augmented, it would follow as a logical conclusion that in pernicious anæmia and in leukæmia, besides the anæmia, other forces are co-operating which evoke the peculiar symptom of increased disintegration of albumin. Thus the view held by me, and above stated, would be affirmed. The researches of Lipman-Wulf,[1] who made them under my control, corroborated my supposition. The careful analysis of food, urine, and fæces showed that the nitrogen equilibrium of his three female patients was kept up perfectly under the food administered, and that they did not lose a trace of body albumin. The tissue metamorphosis took place in exactly the same manner as would have been expected in perfectly healthy persons.

CLINICAL LECTURES.

REMOVAL OF VERMIFORM APPENDIX.

CLINCAL LECTURE DELIVERED AT THE BUFFALO GENERAL HOSPITAL.

BY ROSWELL PARK, A.M., M.D.,

Professor of the Principles and Practice of Surgery and Clinical Surgery, University of Buffalo.

THE patient whom I shall present to you to-day is a lad whom you saw last year in Dr. Cary's medical clinic, suffering from appendicitis. He is now eighteen years old. His first attack of appendicitis was the one for which Dr. Cary treated him, and in the past year he has had two others, from which he has recovered under medical treatment. He is not ill now, and he is not seeking relief from an acute inflammation, but his experience in the last year has convinced him of the force of our arguments in favor

[1] Lehrbuch der Pathologie des Stoffwechsels, p. 338, Berlin, 1893.

of the removal of the offending appendix as a seat of danger of fresh attacks. To-day I propose to remove the appendix deliberately. It is an operation which always ought to be done deliberately, but which is often done of necessity under circumstances of emergency which afford no opportunity to choose a time when the patient is in a condition to withstand shock and with proper surroundings. Without considering the symptomatology of the acute form of appendicitis, I wish to refer to the surgical history of somewhat chronic cases, as well as to their pathology.

The appendix, so far as we know, is a useless annex to the intestinal canal. It is a relic of evolution, of slight use, perhaps, to the earliest men,—more useful in some of the lower animals. In the ostrich it is six feet in length, and has digestive functions. A point in the histology of the appendix is important. Where it enters the cæcum there is located a zone of lymphoid tissue very much like the tonsils or Peyer's patches. This has very free connection with the lymphatic system, as such masses of tissue usually have. Mucous membrane over lymphoid tissue seems prone to catarrhal inflammation, which extends by contiguity of tissue to the *inflammable* mass beneath. The secret of most cases of appendicitis is, probably, that a slight catarrhal inflammation is excited, perhaps, by the irritating character of some fæcal matter when it is too long retained, or, mechanically, by some movement of the cæcum, or by some temporary disturbance of the blood supply. The catarrhal inflammation, unimportant by itself, spreads to the lymphoid tissue, which is thus lighted up to a degree of inflammation limited only by the power of vitality of the body. The original cause of the trouble is largely a matter of conjecture; sometimes we have a history of constipation preceding the appendicitis; very occasionally such foreign bodies as cherry-pits, grape-seeds, etc., which were formerly considered as frequent causes, are found.

Dr. Keen has classified the various forms of appendicitis as follows:

1. Mild form without abscess, lasting a few days, very liable to recur.
2. Perforative form, followed by general peritonitis.
   (*a*) Fulminating form, perforation occurring even as early as thirty-six hours after the onset of the first symptom.
   (*b*) Slow form, with mild symptoms for a time, when perforation occurs and the symptoms are suddenly aggravated.
3. Perforation, but with the formation of conservative adhesions around the appendix and between the cæcum and adjoining organs, so that, although the ulcer perforates the appendix, the rupture takes place not into the peritoneum but into a mass of cellular tissue.
4. Chronic, the abscess forming slowly. According to my experience, this is occasionally tubercular. In three cases there was an enormous caseous mass in the right iliac fossa.
5. Recurrent form, fatal after an uncertain number of attacks.

This classification is partly clinical, partly anatomical. Perforation,

you will notice, is frequently referred to. It is the most serious feature of appendicitis. In the exudate following the catarrhal inflammation, which we assume as the original condition, the superficial epithelial cells undergo a speedy necrosis; in other words, there is a very localized gangrene. Then comes infection from the bacteria which are always present in the intestinal canal in large numbers. The bacteria penetrate into the deeper layers of the appendix; there is an abscess formed which may be so deep as to cause perforation. It must depend largely on anatomical accident whether the perforation shall be disastrous, or whether some hopeful features remain. If the appendix lies loose in the peritoneal cavity without having become gummed into place, as it were, with the cæcum over it to protect it, perforation occurs into the abdominal cavity, and a general septic peritonitis is set up, which is rapidly fatal except in the very rare cases which the surgeon sees early enough to operate upon at once. If, on the other hand, the appendix be surrounded by a mass of lymph and exudate, then the perforation is apt to occur into that mass, bacteria escape only so far, the exudate rapidly breaks down into pus, but enough tissue remains at the periphery to wall in the abscess. There may be only a few cubic centimetres of pus, or a liter or more. A liter and a half has been removed within a few days from the beginning of the trouble; and, again, cases have gone on three weeks before any indications of pus were present. The tendency to the formation of exudate on the peritoneum concomitant with an acute inflammation of the mucous membrane of the intestine often results harmfully; but here we see clearly its conservative influence. Ordinarily, as soon as pus begins to form within, there is an extension of the agglutinative inflammation of the peritoneum, so that when the perforation occurs, a part of the peritoneal cavity has already been walled off for its reception, and a general infection is prevented. Thus you may cut, apparently, right into the peritoneal cavity and find an abscess as big as my two fists occupying what has become an extra-peritoneal space. But, let the patient get up too quickly, or let some one palpate his abdomen a little too roughly and it is possible to have the abscess burst through the protective wall of exudate into the peritoneal cavity.

Another classification for appendicitis which is purely anatomical:

1. Peritonitis appendicularis adhesiva.
2. Peritonitis appendicularis localis.
3. Peritonitis appendicularis universalis.

Is there a ground for such a classification? Yes; although it is rather late to learn the lesson, we have discovered in the last five years that probably ninety-nine per cent. of cases of so-called idiopathic peritonitis, which do not come from the extension of inflammations of the female generative organs, are due to appendicitis. The surgeons have not been at fault in the tardiness of this discovery. They have been ready for years to operate upon cases of peritonitis if pathologists should give them the grounds for doing so. Doubtless, by the time cases of peritonitis get to the autopsy table the

inflammation is general, and the particular region of the appendix does not look much worse than the remainder of the peritoneum, so that the pathologists were excusable in not recognizing the local origin of the disease. Although in many instances gangrene of the appendix was noted, it was regarded as the effect, not as the cause of the peritonitis. The first form of appendicular peritonitis is apt to be favorable from the formation of adhesions. The second or localized form is usually slight, compared with other forms. The third form indicates that general peritonitis has followed as the result of local inflammation, perforation having occurred, or perhaps infection without perforation. In either case the general peritonitis following is almost always fatal.

Coming down to the more practical consideration of such cases, when should we operate and how? You will all grant that when pus is present operation is necessary, but if we must wait till positive signs of pus make their appearance they may be found only at the autopsy. First of all, we must recognize in a general way that there is peritonitis present, and, commonly, the earliest sign is pain. In some cases the peritonitis is first indicated by colicky pains which are not localized, but usually within twelve hours patients narrow down their complaint of greatest pain and tenderness to one particular point of the abdomen, which is known, out of courtesy to its discoverer, as McBurney's point, and which is on a line between the anterior superior iliac spine and the umbilicus, about five centimetres from the former. I do not mean to say that a case cannot be one of appendicitis unless there is tenderness at this particular point, but when a patient voluntarily refers the pain to that particular place, it is almost pathognomonic of appendicitis, and the sign is one which you cannot afford to neglect. The disease varies in acuteness. Sometimes a patient may be a week in reaching the period of localized tenderness. Again, it may come on in six or eight hours. Sometimes there is a tremendous chill, nausea and vomiting at first; at other times there is no particular complaint of pain, but the patient lies down because it hurts him to stand. Neither is there anything typical about the temperature, though it is a bad sign when the temperature runs high and remains so, or when it gradually but continuously mounts. The presence of tumor in the right iliac fossa, with these other symptoms, is also diagnostic. Sometimes, however, and especially in the cases in which the appendix is loose and not surrounded by a mass of exudate, we do not get a tumor, for the swelling is caused by the exudate. These are the worst cases of all, for it is by means of the exudate that protection is afforded, and if you miss the tumor the patient misses the protection of the exudate, and it is very likely that perforation may occur through the unprotected wall of the appendix; and then there is the ordinary picture of collapse, with, usually, death. It is, then, the cases in which diagnosis is most imperative, that a valuable sign is wanting.

When is one to operate—for in large measure the treatment is surgical? I would like to reiterate here a statement of Dr. Keen, that the first duty

of the physician who is treating a case of appendicitis is to call a surgeon. Selfish considerations are not involved, for the post-mortem records of thousands of cases have shown that men could have been relieved and probably cured by early operation. One of the most horrible death-bed scenes I ever witnessed was that of a young medical friend who was dying of this trouble. It was before we knew so much about the possibilities of operating as we do now, and he had called an old physician who did not consider the surgical treatment of the case. Anybody of even moderate skill, knowing what we know to-day about the indications for operation, could have relieved that poor fellow, without question. Although you are spared the painful experience which I had, I want you to learn the same lesson.

As long as there is only a moderate degree of inflammation, with a reasonable amount of exudate and no suppuration, the case may be left to nature, for thousands of cases of appendicitis have recovered without operation. But in any given case, however mild, there is no knowing when operation may become imperative. A case of appendicitis, therefore, requires constant watching. It should be seen every three or four hours, and there should be a well-trained nurse in constant attendance. The surgeon should be notified to be at hand and to have his instruments in readiness, so that operation may be performed on short notice at any time of the day or night. These precautions, Dr. Cary will tell you, were observed in the previous illness of this patient. How much better it is to be ready to operate even if operation may not be called for, than to lose the chance of saving a desperate case through lack of preparation. Any neophyte should be able to recognize the signs of suppuration, and, when they occur, operation should be resorted to. Most emphatically should the occurrence of perforation be responded to immediately. It is a conservative rule that in any case of acute appendicitis which becomes worse instead of better, and in which, at the end of the third day, the temperature is going up and the tenderness at McBurney's point is becoming more and more marked, the necessity for operation is imminent. Should there be local redness or œdema, or anything like fluctuation, then operation is emphatically called for. Should there be the sudden giving way of the vital powers which indicates perforation, operation should not be delayed a minute, and even then it is probably too late to save the patient's life.

At the time this lad was in the hospital, we advised the removal of the appendix as soon as his general vitality was restored, on the ground that he would be liable to recurrences of the trouble. We proved to be true prophets, for he has had two attacks since, not severe, but sufficient to convince him of the advisability of operation. He is in good condition, there is no pus, no exudate, the operation can be performed deliberately without danger of shock. It is, in short, a kind of life insurance. To-day I purpose opening the abdominal cavity, finding and removing the appendix. This will be much easier than if it were bathed in pus or the landmarks

obliterated by a mass of exudate. It is wonderful how this exudate will appear and disappear. Several months ago, I saw a young gentleman in the city in his third acute attack of appendicitis. I was called in rather a hurry, with a view to operation. When I reached the patient, the tenderness had subsided, the temperature had gone down, and I said, "We can safely delay in this case but we must be ready to operate at any time, and if we do not operate during the course of this attack, my advice is to embrace the first convenient opportunity in a few weeks and remove the appendix." At this time, the right iliac fossa contained a mass of exudate as big as my clinched fist, not very tender, and presumably not purulent. This was unmistakable, and was felt by half a dozen physicians who saw him. I operated six weeks later, and found no sign of this tumor. The appendix was lying perfectly free and every particle of exudate had been reabsorbed.

Our present patient, like the one whom I have just mentioned, has had three attacks of appendicitis, and is now without any palpable iliac tumor. While I do not wish to prophesy what may appear, I do not expect to find any considerable amount of exudate here. On operating on what was formerly called a perityphlitic abscess, and what we must now call circumappendical, to coin a word, we do not go into the peritoneal cavity but into a recently formed mass of cellular tissue. Here, however, I must cut into the abdominal cavity, and I shall be as careful as possible to guard against infection. For two days the boy has been wearing antiseptic compresses to sterilize the field of operation. Now, with the patient anæsthetized, on deep pressure I can detect a little tumor. The incision can be made in two or three places. It may be made in the median line, but that is a little too far away from the iliac fossa to permit me to work through a small opening. It may be made in the semilunar line at the outer border of the rectus, or at any point farther away from the middle line and parallel to the rectus, or parallel to Poupart's ligament. It is said that there is less danger of subsequent hernia when the incision is made parallel to the middle line, but I do not really believe that. The vertical line corresponds better to the axis of the ascending colon and cæcum, and is the line I shall follow here.

On opening the abdomen, I find the omentum somewhat adherent as the result of the old inflammation. I run my finger down the peculiar band of the ascending colon to the cæcum, and this brings me directly to the appendix. I handle the parts as little as possible, to avoid setting up a reactive peritonitis. I am gradually detaching the cæcum and bringing it out from the old adhesions which bind it down. The appendix comes out fully as large as many specimens of pyosalpinx, as large as my little finger up to the second joint. It has a miniature mesentery, which must be tied off with catgut. To avoid any possible leakage of the contents of the appendix into the abdominal cavity, I stuff iodoform gauze around, before opening the appendix. I have not the slightest doubt that this boy

would have lost his life at some future time from trouble with this appendix. You notice that I have got the catgut ligature around the appendix, having stripped down the serous coat, which I shall sew up again. The appendix is now cut away, and the stump cauterized with powdered zinc chloride.

I have now sewed the peritoneal covering over the end of the stump. This procedure requires considerable time, but it is important as guarding against sloughing or leakage into the peritoneal cavity. The stump of the appendix and the cæcum are now sprayed with hydrogen peroxide. I shall now close the wound with silkworm-gut, using for drainage a strip of iodoform gauze wrapped in green silk protective. The latter is nipped so as to provide a number of openings such as the ordinary rubber drains contain. Opposite the space provided for this capillary drainage I insert a secondary suture but do not tie it. Two days from now, when I shall remove the drain, I will tie this remaining suture.

An ordinary dry antiseptic dressing is applied over all. The appendix shows very little evidence of disease except great thickening of the tissues from the old inflammatory deposits.

[The further progress of the case was favorable and uneventful.]

THREE CASES OF ARREST OF DEVELOPMENT.

CLINICAL LECTURE DELIVERED AT THE PITY HOSPITAL.

BY DR. L. CAPITAN,

Chef de Clinique, Paris Faculty of Medicine.

NORMAL growth can be profoundly modified by different factors and in an inverse sense or direction. In some of the cases the intercurrent causes suddenly arrest development, while the person goes on increasing in age, but his body remains what it was when the development was arrested, while in other cases the normal growth takes a sudden, excessive impulsion, and the individual becomes a giant in size although unchanged in other ways. These deviations of growth have an action, then, not only on the *physical* structure of an individual, but also on his *psychical* evolution. Most of the intense effort made by nature in the giant cases has an unfavorable influence on the psychical development of the subject in question. This we know is always so in the more usual cases of arrest of development, such as we see in dwarfs, but they can both be classed under the same heading as arrests of development.

Three different types of these cases of modification in development have lately come into our service in the wards of Pity Hospital, and they are interesting as models of comparison.

Charles F., who is twenty-one years of age, weighs one hundred and eighty-four pounds, and stands nearly six feet in height, was admitted into the hospital for pains in the limbs. He is the seventeenth child in a family of twenty, which is very remarkable in France. His father was the strong man in a circus, he drank a great deal, and was assassinated at the age of forty-eight. He was not a tall man, although very powerful. The mother is still alive, only forty-four years of age, and is a strong woman, but not tall.

His own history is that he had typhoid fever and small-pox at nine years of age, when he was in Trousseau Hospital for fifteen months. Then from twelve to sixteen he had attacks of eczema every year, for which he went into the St. Louis Hospital last year and stayed there five months, where he was cured. Up to eighteen years of age his growth was normal, when he was suddenly taken with severe pains in the legs, which kept him in bed three months. During this time he grew very rapidly, and has continued to do so ever since. His face is that of an infant and he has no sign of a beard; he looks, in fact, like an overgrown little boy, not a man of twenty-one. His members are thin and the pelvis is of the feminine type; no hair on the pubis, and the genital organs are small for his age, being like those of a boy of fourteen. With the dynamometer in his hand and making his best efforts, he cannot raise it to more than thirty-eight in the right hand and thirty-five in the left. As to his character he is a vapid boaster; he cannot read or write, but talks rapidly, like most of the Paris working-class; his psychical individuality resembles his physical one; he has simply grown, but has not been properly developed since he was seventeen, so that we can say of him, what at first seems paradoxical, that he is a case of arrest of development by giantism.

Our second subject is far from having the fine height of the first. He is a dwarf, looking like a little old boy-man, remaining a child of nine years or less in intelligence. His name is Réné L., and his age is twenty-nine; he is about four feet in height and weighs a little over seventy pounds. He came into the hospital for some skin eruption that was probably of parasitic origin. His eldest sister gave us his medical history. The father died at seventy, was a weaver, and had been afflicted with some venereal trouble from which he had suffered for a long time, but we could not fix it as syphilis. He was a man of quiet character and did not drink. The mother was of a strong constitution and had had eighteen children, who are all alive. She was a violent, nervous woman and drank. As to his personal history, he is the fifth or sixth of the family and was a weak child, but, however, developed normally up to nine years of age, having none of the usual maladies of children. His genital organs remained in an atrophied state. At nine years of age, then, without any reason for it, his development was arrested. He went on to nineteen years of age without acquiring any disease, when he got syphilis from his brother, who had it. The brothers are usual-sized men. His disease commenced by headache and insomnia, and plaques that covered him from head to foot. He was in the Midi Hospital for four months and was cured of the syphilis, but his headaches persist, and he suffers from them every year.

In these subjects the years that succeed seem to count twice or double for them in age, and yet their precocious age does not give them any of the intelligence it does to normal persons. There is a marked development of the breast, and the pelvis is feminine. There is a complete absence of hair on his body, and the genital organs are those of a very small boy. The testicles are not larger than a small bean, and can be made to ascend the inguinal canal with ease. He is hyperæsthetic to irritation, such as pinching, heat, and pin scratches. The visual field on the left side is retracted, but he has no other hysterical stigmata or alteration of the special senses. His muscles are but slightly developed, as the dynamometer gives only twenty-one on the right side and eighteen on the left. He is well proportioned in body and rather fat. The genital organs seem to have been arrested from his babyhood, and

the arrest of general development was, as we said, at nine years of age. This was a total arrest that had its effect on all his nature. He has a complete perversion of the genital instinct and was a masturbator from his first years, becoming an erotomaniac later, as he was charged with exposing his person and attempts at rape, but without result, as there is a most complete loss of power and impossibility of actual coition. His actual intelligence is that of a very small child; he cannot read or write, but can count up to one thousand; he never could learn any trade or occupation of any kind. He has a strong criminal propensity, and will pass hours over the designs in the papers showing assassinations or murders. These scenes make his eyes flash with joy. When he is angry he says he could kill some one, *if he was only strong enough,* as he says to himself. He dotes on tobacco, and is quite happy when it is given to him. As a rule he is well-behaved, but mostly through fear of being beaten. Like most of the degenerated subjects, he would do harm if he dared, as he has no moral sense except through fear. He is, in fact, an arrest of development in a subject that seems as though he was predestined to it from the arrest of development of the genital organs, which started in him from a very early age. He acts and thinks now like an old man of seventy, and only looks forward to securing his retreat into an asylum like Bicêtre, near Paris.

Alongside of him we may describe our third case, which is that of a little girl of eight and a half years of age, who seems to have had her arrest of development from rickets. A. V. comes regularly to our consultation at Pity Hospital. Her father is living, forty years of age, and is of a feeble constitution, though nervous and violent; does not drink. The mother is thirty-eight, of a violent character, and has three children in all. One sister to Augustine is certainly a neuropathic subject. She is subject to profuse perspiration of the hands and feet; a brother of four years of age is well. As to her personal medical history, she is three feet in height and weighs under fifty pounds. Up to the age of six months she was well, when she had a tumefaction of the inferior extremities of the femurs and the superior extremities of the tibias. Little by little there came after this an incurvation of the legs. The abdomen is voluminous, and she walks with great difficulty on account of the curving of her legs inward. She presents all the appearance of a child of four; indeed, her brother, who is four years of age, is much taller and better developed. Her nutrition is badly conducted, as she does not care to eat. She answers questions fairly well, but is not any more intelligent than a child of four, as she has barely learnt her letters yet.

These three cases of anomaly in development, manifesting themselves by such different symptoms or signs, have nevertheless a common character —the arrest of physical and moral evolution.

To this simple descriptive study we could add a pathogenical investigation, but there is very great difficulty in making it out. In the first case, can we look for the cause in a general dystrophia analogous to that which produces giants or acromegalia? It is possible, and even probable, but we can give no proofs. In the second case it is possible to incriminate hereditary syphilis (of the father), but this we could not prove; and, besides, he had himself acquired syphilis from his brother, so the pathogenesis escapes us here. The last case—of the little girl—can be brought to the charge of rickets. In any case, we can range them in the same group in pathology, and say that there is an arrest of development both in the physical and moral sense in all of them, although they are two dwarfs and a giant in evolution.

REVIEW OF MEDICINE.

MEDICINE.

IN CHARGE OF JUDSON DALAND, M.D.,
Instructor in Clinical Medicine and Lecturer on Physical Diagnosis in the University of Pennsylvania; Assistant Physician to the Hospital of the University of Pennsylvania; Physician to the Philadelphia Hospital and to the Rush Hospital for Consumptives.

The Causation of Pernicious Anæmia. (Zur Pathogenese der progressiven perniciösen Anämie. *Deutsche medicin. Wochenschr.*, Nos. 30 and 31, 1893.) By A. Wiltschur.

The author raises the interesting question as to the manner in which tape-worms produce pernicious anæmia. He mentions the ordinary supposed causes; among such, irritation of the intestinal mucous membrane or of a parasite producing a poison which is absorbed. He does not believe that the blood-making organs are diseased, but are influenced *secondarily* by the great demand made upon them for the increased supply of blood-cells. Considerable importance is attached to the condition of the intestines, and the author believes that in most cases there is some lesion in the gastro-intestinal tract. When this is associated with the taking of improper food the possibility of the formation and absorption of ptomaines is greatly increased. In conclusion, the author recommends the washing out and disinfection of the stomach and bowels; to aid digestion and relieve gastro-intestinal irritation. In cases unassociated with intestinal trouble he prefers the use of arsenic and iron, which he believes to be a purely symptomatic treatment. —*St. Petersburger med. Wochenschr.*, December 11, 1893.

The Composition of the Blood in Health and Disease. (Ueber die Zusammensetzung des Blutes gesunder und kranker Menschen. *Zeitschr. für klin. Med.*, xxiii. p. 187.) By R. v. Jaksch.

The author estimates that normal blood contains 22.6 per cent. of albumin, of which blood serum contains 8.86 per cent. He has observed a slight reduction from normal in nervous diseases and in diabetes mellitus, although in the latter affection the quantity of substance obtained after desiccation was greatly increased. In febrile diseases, such as pneumonia, meningitis, and polyarthritis, there is a slight decrease in the amount of albumin, and an unimportant increase in the amount of water in the blood. This slight decrease in the amount of water was especially noted in typhoid fever, typhus, and occasionally in septicæmia, and, when these cases became severe, the normal percentage of the albumin was considerably decreased.

The percentage of albumin and water varied both above and below normal in diseases of the kidney. In pernicious anæmia the hydræmia was excessive, amounting in one case to as much as 89.3 per cent. of substance; while the solid matter was reduced to 10.8 per cent. The amount of albumin was always greatly reduced, sometimes being as low as ten per cent. Cases of chlorosis gave somewhat similar results, the percentage of albumin being decreased to seventeen per cent. The diminution in albumin and the hydræmia was also observed in anæmia secondary to hemorrhage, malaria, scurvy, and cancer.

The author closes his article by the very interesting observation that the diminution in the number of blood-cells was usually in proportion to the diminution in the percentage of albumin present, with the exception of typhus, typhoid fever, nephritis, and chlorosis, and that the diminution in the hæmoglobin percentages was proportionate to the diminution in the amount of albumin in the blood-cells. In most cases the quantity of albumin was about the same as after desiccation, with the single exception of typhus, where it was greatly increased. It is also interesting to note that the less the percentage of albumin the greater the hydræmia, and *vice versa*.—*Centralblatt für die med. Wissen.*, December, 1893.

Cutaneous Absorption. (Absorption cutanée. *Arch. ital. de Biologie*, ix. p. 257.) By S. Fubini et P. Pierini.

These authors have made a series of experiments upon men and mammalians by bringing the normal skin in contact with certain solutions for many hours. In conclusion they state, as the result of these experiments, that the uninjured skin *does not* absorb non-volatile substances.—*Centralblatt für die med. Wissen.*, December 16, 1893.

The Condition of the Functions of the Stomach in Different Diseases of the Liver. (Ueber das Verhalten der Magenfunctionen bei verschiedenen Leberkrankheiten. Aus der med. Klinik des Herrn Prof. Eichhorst in Zürich. *Virchow's Archiv*, vol. cxxxii. No. 3, p. 490.) By J. Leva.

The absorptive power of the stomach was determined by iodide of potassium, and the presence of hydrochloric acid by Günzburg's test.

These examinations were made in the following diseases:

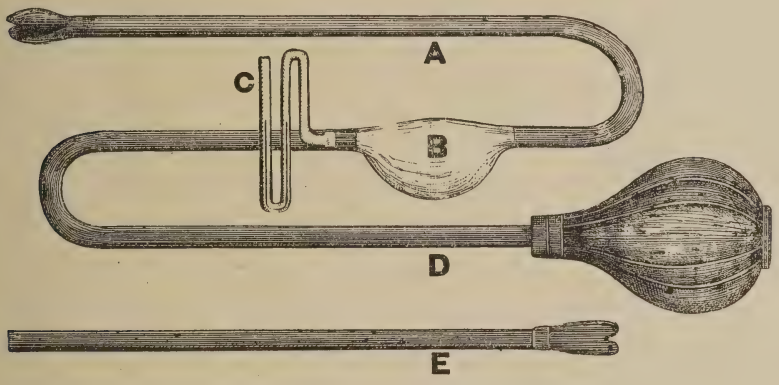
1. Cancer of the liver and gall-bladder.
2. Multilocular echinococci cysts of the liver.
3. Hepatic cirrhosis.
4. Cholelithiasis.
5. Catarrhal jaundice.
6. Congestion of the liver.

In most cases of cancer the absorbent power of the stomach was more or less diminished. Examinations as to hydrochloric acid gave variable results. The functional power of the stomach was unimpaired. In one case of echinococcus cyst of the liver the secretion of hydrochloric acid was

normal, and the rate of absorption was greatly diminished. The function of the stomach was normal in most cases of cirrhosis of the liver, excepting in the last stages, when the acidity was at or above normal. Both increased and diminished rate of absorption were observed. In cholelithiasis the results permitted of no conclusion. In catarrhal jaundice there was marked diminution in the amount of hydrochloric acid, and a diminution in the rate of absorption. When the jaundice disappeared the stomach regained its normal function. In hyperæmia of the liver the function of the stomach was unimpaired.—*Centralblatt für die med. Wissen.*, December 16, 1893.

A New Apparatus for obtaining the Contents of the Stomach for Diagnostic Purposes. (*New York Medical Journal*, November 18, 1893.) By M. Gross.

The instrument consists of a long, thin Nélaton catheter (A), with one opening at its proximal extremity, or with an olive-shaped extremity, composed of hard rubber, and entirely covered by the rubber tube. The middle piece represents an eccentric glass bulb (B) for the purpose of collecting



the stomach-contents, and connected with the bulb is a manometer (C) for determining the changes of pressure in the tube. The end piece (D) of the tube is made up of a modified Politzer bag, or may terminate in a mouth-piece (E), in which case the physician himself aspirates.

The author believes that, when this instrument is introduced, it gives less discomfort than the ordinary apparatus. [If the stomach portion (A) is of sufficient length, this instrument may be used for the expression method, and it is probable that the olive-shaped extremity would lessen the nausea and discomfort produced by the injection of the ordinary tube. The addition of the manometer would seem quite unnecessary in practical work under ordinary circumstances.—J. D.]

THERAPEUTICS.

IN CHARGE OF ALEXANDER D. BLACKADER, B.A., M.D.,
Professor of Therapeutics, McGill University, Montreal, Canada.

ASSISTED BY

D. I. EVANS, M.D.

A Study of the Influence of Chloroform upon the Respiration and Circulation. By H. A. Hare, M.D., and E. Q. Thornton, M.D.

In this report to Surgeon Lieutenant-Colonel Lawrie and to the government of His Highness the Nizam of Hyderabad upon experiments made at the Jefferson Medical College, Philadelphia, the authors agree with the statement of the Hyderabad Commission, that a fall of blood-pressure always occurs when chloroform anæsthesia is produced. This fall in blood-pressure is dependent almost entirely upon depression of the vaso-motor centre, and not primarily on a weakening of the heart's action, as asserted by Gaskill and Shore. They also agree with the Commission in their statements that insensibility comes first, then respiratory failure and final arrest, and that cardiac arrest never ensues primarily from the inhalation of chloroform. They also find, as did the Commission, that if the chloroform be stopped early in its use the pressure rapidly rises again, and if respiration should cease, it may spontaneously return, or can be renewed by artificial respiration. On the other hand, if chloroform have been given in excess, neither of these results takes place, and death ensues whatever may be done. Irritation of the vagus may occur, which they think in some cases may be an element of danger rather than of safety, as stated by the Commission. They also state that it has never been proven that chloroform can cause in the human subject permanent reflex inhibitory cardiac arrest, and as our experiments upon the dog have failed to cause such arrest, we consider it very improbable that cardiac arrest is ever produced in man by chloroform, unless the state of the heart, through disease, is such as to be unable to withstand any shock whatever. They agree with McWilliams that from the very first inhalation of chloroform there is a constant tendency to cardiac dilatation. They express their opinion that chloroform is a safe anæsthetic in the majority of cases, provided that it is given by one skilled in its use, and who not only knows how to give it, but how to detect signs of danger. Other things being equal it is not as safe as ether, and never so in the hands of a tyro. They think it all-important to watch the respiration, because as soon as enough chloroform is used to endanger the circulation the respiration will show some signs of abnormality in depth, shallowness, or irregularity. Sometimes such deep and rapid respiration may occur that without care an excessive quantity is taken into the lungs, and continues to be absorbed even after the inhaler is withdrawn. It is the bounden duty of the chloroformist to maintain natural breathing throughout the whole period of administration. To maintain this requires careful

training and considerable experience, but if this condition be fulfilled, anæsthesia can be safely produced by chloroform.

Clinical Remarks on the External Use of Guaiacol in Reducing High Temperature in Typhoid Fever and Other Febrile Diseases. (*Medical News*, January 27, 1894.) By Dr. J. M. Da Costa.

In this article the author gives us the result of his experiments in the reduction of high temperatures in continued fevers by the external application of guaiacol. The powerful antipyretic effect of this drug when applied to the skin was first pointed out by Sciolla (*Sem. Méd.*, No. 21, 1893). Then followed Bard's observations on tuberculous patients, which were soon corroborated by Lannois. The writer, after reflection on these observations, determined to make use of it in the continued fevers, when the temperature ran high, in such cases as would ordinarily have been treated by cold baths. In each case the local application of guaiacol was followed by a distinct but slow reduction of temperature, unattended by any noticeable disturbance of the circulating or nervous system. There was no delirium, no change in the pulse or respiration, no obvious change in the urine. Sweating occasionally happened, but was not liable to be great. In some cases chilly sensations were experienced as the temperature fell. Dr. Da Costa thinks that this mode of treatment will prove useful in all those cases in which one might employ the cold-water treatment, if the conveniences were present, or circumstances would permit. The guaiacol treatment is to be preferred in all instances where moving or disturbing the patient is to be avoided, and in typhoid cases where a tendency may exist to severe diarrhœa, or to intestinal hemorrhage. One of the chief objections to the treatment is the decidedly unpleasant odor caused in the sick-room. It is best overcome by the addition of oil of cloves. The mode of employment recommended is by rubbing it upon the skin of the abdomen or thigh, after the selected spot has been first prepared by washing with soap and water. It may also be simply painted over the surface, which is then to be covered with lint and waxed paper, but in this case the effect is not so rapid. The maximum dose in his investigations was fifty drops, but this amount is rarely required, and should never be exceeded. The average dose is about thirty drops. With a temperature of 103° it would be advisable not to exceed twenty minims at the first trial. He advises that the urine be carefully watched during the employment of the drug, but in none of his cases did he detect any signs of kidney irritation.

Acute General Tuberculosis Treated with External Applications of Guaiacol. (*Bull. Gén. de Thérapeutique*, January 23, 1894.)—In a paper presented before the Medical Society of Lyons, M. Courmont describes the wonderful success which he had in a case of acute tuberculosis, presenting signs of induration of the right apex and pericarditis, with hæmoptysis, high temperature, and symptoms — such as vomiting, strabismus, and

inequality of the pupil—only to be explained by meningeal complications. Bacilli were found in the expectoration. After several paintings with fifty centigrammes of guaiacol the temperature fell, not to rise again, and the symptoms improved. Under the continued use of the drug the physical signs cleared, and the bacilli disappeared from the expectoration.

Guaiacol Applied Locally in Erysipelas. (*Le Mercredi Médical*, 1893, No. 42, p. 510.)—M. Bard reports successful results from the topical application of guaiacol in the treatment of five cases of erysipelas. From fifteen to thirty minims were painted over the affected surface, and for a short distance beyond on the apparently healthy skin. The application was followed by a reduction of temperature which continued for some hours.

An Inquiry Regarding the Importance of Ill Effects Following the Use of Phenazon (Antipyrin), Acetanilid, and Phenacetin, conducted by the Therapeutic Committee of the British Medical Association (*British Medical Journal*, January 13, 1894).

In this very carefully conducted investigation the committee report that the result of their inquiries demonstrates that, in the large majority of cases, the ill effects have been the direct result of injudicious and excessive dosage. In reference to phenazon, they conclude that the ill effects are not of the frequency or importance ascribed to them by a wide-spread impression. Among the precautions to be adopted, the most useful one is to begin with small doses, not exceeding ten grains, and to be careful not to repeat them too frequently.

The reports in reference to acetanilid, as compared with phenazon, point to a radical difference, not so much in the physiological action, for that in both cases is exerted chiefly on the circulation and nervous system, as in the power of the two drugs. Acetanilid is a much more powerful drug than phenazon. Speaking generally, it may be said that two grains of acetanilid are equivalent, as regards general therapeutic effect, to about ten grains of phenazon. The reports place the ill effects of acetanilid as of a much more severe character and of more frequent occurrence than those of phenazon, while there is no such direct relation of the ill effects to the dosage to be made out as was the case with phenazon, indicating that acetanilid is more inconstant in its action, and correspondingly more dangerous than phenazon. They consider that to give acetanilid in doses of five or six grains, and still more to repeat these doses after a short interval, is a highly injudicious procedure.

Phenacetin appears to be in exceedingly good repute with those who have had an extensive experience of it. Ill effects have been strikingly infrequent, and there is much unanimity as to the great value of this drug, especially as an analgesic. The initial dose that may be given with safety appears to be from five to eight or ten grains.

NEUROLOGY.

IN CHARGE OF CHARLES W. BURR, M.D.,

Pathologist to the State Asylum for the Insane, Norristown; Visiting Physician to the Home for Incurables; Visiting Physician to St. Joseph's Hospital, Philadelphia, Pa.

On Familiar Forms of Cerebral Diplegia. (Ueber familiäre Formen von cerebralen Diplegien. *Neurolog. Centralbl.*, Nos. 15 and 16, 1893.) By Dr. Sigm. Freud.

This author distinguishes four clinical types of cerebral diplegia: 1, the general rigidity (otherwise congenital cerebral spastic palsy); 2, the paraplegic rigidity (otherwise the spastic spinal paralysis of children); 3, the bilateral hemiplegia; and, 4, the congenital chorea and bilateral athetosis (or Hammond's disease). The boundary of cerebral diplegia is not sharp, the pathological anatomical characteristics are also not entirely determined; that they are due to manifold, chiefly vascular, lesions the cortical appearance shows. Cerebral diplegias are cerebral diseases; these characteristics would be given by the sum of the symptoms. The author reports three cases in one family, issue of a marriage of uncle with niece. The chief symptoms were: 1. Atrophia nervi optici with nystagmus horizontalis and strabismus in fixation. 2. Bradylalia with peculiar monotone voice. 3. Spastic motor paralysis of the extremities. There were differences in the three cases. In the elder pair there was rigidity of arms and legs, with awkwardness and tremor, an evident grade of paralysis. In the youngest the symptoms were reduced to a spastic rigidity of the lower extremities with no limitation of motion; the arms were free. The development of the symptoms presents another interesting difference between the two elder children and the third. The former showed symptoms from birth, while the latter, after a previous normal development, showed signs of the disease after two years. A remarkable fact in the histories of these cases is that the mental development does not seem to have been materially retarded.

SURGERY.

IN CHARGE OF HENRY R. WHARTON, M.D.,

Demonstrator of Surgery and Lecturer on Surgical Diseases of Children in the University of Pennsylvania; Surgeon to the Presbyterian Hospital, the Methodist Episcopal Hospital, and the Children's Hospital; Consulting Surgeon to the Presbyterian Orphanage.

AND

JOSEPH P. TUNIS, A.B., M.D.,

Assistant Demonstrator of Surgery in the University of Pennsylvania; Surgeon to the Dispensaries of the Presbyterian, Methodist Episcopal, and Children's Hospitals.

An Extensive Injury of the Chest. (*Boston Medical and Surgical Journal*, November 2, 1893.) By O. T. Howe, M.D.

The author reports a severe railroad crush of the chest in a boy eleven years old. The patient was caught between the bumpers of freight-cars.

When first seen he was in a state of collapse. Examination showed that four ribs in front and three behind were crushed in, forming compound comminuted fractures. The anterior wound was four inches long, while the posterior was smaller. After a few days a drainage-tube was passed through the chest; there was a large discharge of serum and pus, but the boy continued to improve. The patient was etherized, the loose fragments were removed, the projecting ribs cut off, and the opening in the back enlarged. It was then possible to insert the whole hand into the chest and make a thorough examination. The lung had collapsed and had granulated and healed. The patient made a good recovery with the injured side collapsed, only faint respiratory sounds remaining.

Diphtheria: Tracheotomy; Persistent and Increasing Dyspnœa; Systematic Curetting of the Trachea; Recovery. (*Boston Medical and Surgical Journal*, November 9, 1893.) By Charles L. Scudder, M.D., of Boston.

The author reports the case of a boy of four years, to whom he was called on the third day of a diphtheritic attack. The otherwise vigorous condition of the patient made the increasing difficulty in breathing an indication *par excellence* for tracheotomy. The relief was instantaneous; but, although all precautions were observed, on the third night the breathing became very difficult. The cleansing of the tubes, their removal, and the cleansing of the wound were of no avail, as also the passage of a catheter; and as a last resort a dull-wire intra-uterine curette was gently introduced, and the whole circumference and length of the trachea were curetted. The hemorrhage was slight. The relief to the dyspnœa was immediate. The tube was replaced, and the boy made an uninterrupted recovery, and is now well and strong two years after the operation.

Remarks upon Appendicitis, based upon a Personal Experience of One Hundred and Eighty-one Cases. (*American Journal of the Medical Sciences*, January, 1894.) By Maurice H. Richardson, M.D.

The large death-rate, the uncertainty of treatment of the gravest forms, and the unrecognized great prevalence of this disease, are the reasons which compel this author to report the cases in his experience, and to remark upon the diagnosis, symptomatology, classification, treatment, and prognosis of the different forms.

Pain, tenderness, vomiting, diarrhœa, and the time of perforation, are the symptoms upon which he would lay most stress. The constitutional symptoms he does not consider of so great moment, while distention is only valuable when considered in the light of its causation. Rectal and bladder symptoms, he says, should never be overlooked; while leucocytosis is a condition which he has found present, with one exception, in all cases of perforation.

Operation, he believes, is indicated in all cases of circumscribed perito-

nitis, and abscess-opening and drainage are the indications. In localized peritonitis, with probable general infection, it is an entirely different matter. The prognosis is grave. "It is during these days—the third, fourth, and fifth, or later—that the early operation may be said in some cases to be too late. The extravasation from the perforated appendix has taken place; the harm from this extravasation has been done; Nature, in her own way, has successfully thus far opposed this extravasation. The adhesions are not strong, and in separating them we are almost sure to contaminate the rest of the peritoneal cavity. It seems to me—though I am by no means convinced of the truth of this assertion—that there are instances in which we see the case too late for the early operation and too early for the late operation.

In relapsing or recurring appendicitis, he advises operation in the period of health, for the mortality is then small, while the dangers of death from recurrence are increased. In acute appendicitis with general infection, the indication is for operation, with drying and cleansing of the peritoneal cavity and the removal of the appendix. This should be followed by drainage and a dry, absorbent, antiseptic dressing. In some cases the patient's condition allows only incision and drainage, while in moribund patients all operation should be given over, as the patient's only chance lies in Nature's efforts. The use of salines in any stage the author considers injurious, unless it be in the mild cases, or when, after the removal and ligation of the appendix or drainage of the abscess-cavity, there is no further danger of extravasation or rupture of slight adhesions.

The prognosis depends entirely upon the variety of appendicitis. In mild cases, with one or two exceptions, recovery without operation has taken place. The prognosis in cases of localized peritonitis is almost invariably good, and where appendicular abscesses have been opened and drained, it is good. "In cases of well-established, general peritonitis, where there is a severe constitutional infection, where the intestines are paralyzed by the local poison, the prognosis is invariably hopeless. I have never seen, so far as I am now able to recall the facts, a recovery in any case of fully-established general peritonitis, marked by constipation, vomiting, and general septicæmia.

"The prognosis in operations for the removal of the appendix in the interval, with or without adhesions, is very good indeed. I do not believe that the mortality will exceed five per cent., and probably it will be less than that."

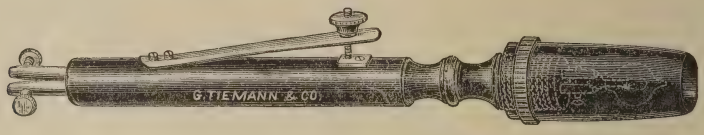
The prognosis is seriously affected by a history of previous attacks, and, should peritonitis occur, it will be of the fulminating and rapidly fatal type. In one hundred and eighty-one cases the mortality was 24.3 per cent. In one hundred and seven of these cases requiring operation, the mortality was 28 per cent. In thirty-two cases of general peritoneal infection, the mortality was 75 per cent.

GENITO-URINARY SURGERY.

IN CHARGE OF WILLIAM K. OTIS, M.D.,
New York.

The Hydrocele Detector. (*Journ. Cutaneous and Genito-Urinary Diseases*, December, 1893.) By William K. Otis, M.D.

This little instrument has proved so useful in the practice of the author and in the hands of some of his friends who have used it during the past three years, that despite its simplicity he takes pleasure in presenting it to the notice of the profession.



William K. Otis's hydrocele detector.

It consists of a round, hard-rubber handle five inches in length, at the distal end of which a "mignon" incandescent electric lamp, identical with those used in the electro-urethroscope, is placed. This lamp connects with the battery wires by connections passing through the handle and terminating in "binding posts" at its proximal end. The light is controlled by means of a spring "switch," which can be either pressed down by the thumb or fixed by means of a thumb-screw. A hard-rubber tube two inches in length and one inch in diameter is screwed to the top of the handle over the lamp, enclosing it and only allowing the escape of light at the open end.

When a suspected hydrocele is presented, the mouth of the tube is pressed firmly against the tumor on the side opposite to the operator and the lamp turned on, when the entire tumor, if fluid, will be rendered luminous. The light is very powerful, and in most cases the testicle can be readily mapped out and definitely located. This apparatus has also proved exceedingly valuable in illuminating the bladder after suprapubic section and in making examinations of the mouth, nose, vagina, and rectum.

The Examination of the Female Bladder and the Catheterization of the Ureters under Direct Inspection. (*Bulletin of the Johns Hopkins Hospital*, November, 1893.) By H. A. Kelly, M.D.

Dr. Kelly finds that in the female bladder the catheterization of the ureters can be as readily performed as the inspection by means of the endoscope, and consists in carrying a straight ureteral catheter through the urethroscopic tube down into the orifice and up the ureter for several centimetres. He usually employs a searcher first, to assure himself that the opening under inspection is the ureter. This is especially necessary when there is vesical or ureteral disease, as the ureteral orifice is often more or less concealed in such cases.

An excellent mechanical method of exposing the orifice is by intro-

ducing the speculum until the apex of a V marked on the outside, six centimetres from the end, touches the external meatus urinarius. The angle between the arms of the V is sixty degrees. If the speculum is now elevated until the base of the bladder is brought in view, and then turned to the right or left until one of the sides of the V is in a line with the normal axis of the urethra, thus, ⩗, the ureter will appear within the field embraced by the inner orifice of the speculum. The ureteral orifices are so easily found, after a little practice, that it is not even necessary to elevate the hips and distend the bladder to catheterize them. It is only necessary to introduce the speculum, elevate and turn the handle to the point where the ureteral orifice should be found. By pressing the inner end down against the bladder-wall the urine is excluded, and the ureteral opening will often be found at once within the lumen of the speculum. It can always be brought into view by exercising a little patience and sliding the end of the speculum over the bladder-wall, and thus inspecting the ureteral area.

External Urethrotomy versus Internal. (*American Practitioner and News.*) By W. C. Dungan, M.D.

Under this heading the author simply refers to external urethrotomy for deep strictures of small calibre. He considers that the indications for its performance are:

1. In all cases where there are false passages it is imperatively demanded.
2. In all cases of close strictures of the deep urethra, where there is cystitis, it is by far the best way to get rid of both strictures and cystitis.
3. Where we have urinary fistulæ resulting from neglected strictures, it is the most certain and rapid method of dealing with them.
4. When for any reason it is desired to secure thorough drainage of the bladder.
5. In those chronic cases where you have reason to suspect stone of the bladder, and you desire to chloroform your patient but once and relieve his stricture, explore his bladder, and, if stone is found, to get rid of it all at one *séance.*

A Contribution to the Treatment of Rupture of the Bladder. (*Papers upon Genito-Urinary Surgery.*) By A. T. Cabot, M.D., Boston.

A careful study of the literature of extra-peritoneal rupture of the bladder has led Dr. Cabot to believe that an exploratory laparotomy is often a necessary first step to the intelligent treatment of extra- as well as of intra-peritoneal ruptures of the bladder, and he considers that in many such cases a preliminary exploration of this sort will furnish information that will greatly better the chances of recovery. He suggests for consideration the following rules:

1. When an intra-peritoneal rupture is made out, an immediate laparotomy, with suture of the bladder wound and subsequent drainage of the bladder, should be done.

2. When a reasonable doubt exists as to whether the rupture is intra-peritoneal or not, an immediate laparotomy should be done.

3. If an extra-peritoneal rupture is made out, and uncertainty exists as to the direction in which the urine is extravasated, a laparotomy should be done for exploration to ascertain how the drainage may best be placed.

4. In the case of fracture of the pubes, with evidence that the urine is extravasated in the prevesical space, an incision should be made in the suprapubic region, a tube should be carried to the bottom of the effusion, and a median or lateral lithotomy should be done for drainage of the bladder.

Exception.—Occasionally, in cases of severe injury with much shock when a long operation could not be borne, a median lithotomy may be hastily done for drainage, and the opportunity may be taken for exploration of the position of the rent, to serve as a guide for further interference in case the patient rallies sufficiently.

ORTHOPÆDICS.

IN CHARGE OF REGINALD H. SAYRE, M.D.,

Assistant to the Chair of Orthopædic Surgery, Bellevue Hospital Medical College, New York.

The Etiology of "Ganglion" of the Hand.—The *Medical Week*, February 24, 1894, contains an article on this subject, quoted from several recent writers, and giving a synopsis of Professor Ledderhose's article in the *Deutsche Zeitschrift für Chirurgie*, xxxvii. 1, 2.

"Professor Ledderhose bases his views on histological examinations . . . of a number of cysts of the popliteal space and seven cases of ganglion of the hand. . . . Multiple cavities were found in the cysts, and their walls were closely connected with the pericapsular and capsular connective tissue, which, in the opinion of the author, is the seat of their own origin." They were examined in different stages of development. "Beginning as an alveolar mass, scattered in the surrounding connective tissue, a cavity is gradually hollowed out at the centre of the 'ganglion,' slowly increasing in size and becoming unilocular when 'mature.' Its evolution is, therefore, the same as that of any other polycystic neoplasm."

Professor Ledderhose infers, therefore, "that a 'ganglion' is a veritable neoplasm," "a cystoma resulting from a gelatinous colloid degeneration of the connective tissue, and the progressive fusion of a number of small cavities containing a jelly-like fluid." "As regards its origin, it is impossible to say whether it is to be attributed to traumatism, sprain, or stretching of the joint, or else to repeated irritation and daily contusions provoked by certain exercises."

The "ganglia" of the wrist are usually found in the *medio-carpal* articulation in a fossa bounded by the os magnum and trapezoid on one side,

and the scaphoid and semilunar on the other. "As it grows larger, the cyst becomes perceptible on the outside, ordinarily between the tendons of the extensor indicis and extensor carpi radialis longior." It may continue to grow and extend to the palm of the hand.

In regard to the treatment, Professor Ledderhose concludes that the tendency of ganglion is toward spontaneous cure at some indefinite time; that in the mature stage, crushing or simple discission may be sufficient, but in the polycystic stage, multiple discission through the whole wall and the deep layers of the cystic sac is necessary, and total extirpation is better. To these procedures must be added the method of largely opening the cyst, followed by curettage and plugging. It is true, and the author repeatedly asserts this fact, that the sac is completely closed, and does not communicate with the neighboring articulation; but, nevertheless, in order thoroughly to do away with the mischief, it is often necessary to attack the capsule as well, and cut out, with the "ganglion," a fibrous layer, more or less thick.

OPHTHALMOLOGY AND OTOLOGY.

IN CHARGE OF J. E. HARPER, A.M., M.D.,
Chicago, Illinois.

Disease of the Middle Ear.—In an article on this subject (*Columbus Medical Journal*) Dr. A. M. Duncan summarizes the treatment as follows: "Acute inflammation must be met by prompt and energetic treatment. Put the patient under as healthy conditions as possible. Combat the constitutional symptoms by appropriate remedies, and the pain by local heat, best by the warm water douche and subsequent hot applications. Use opiates internally, if pain is not relieved by local measures. Puncture the membrane when required. As soon and as long as there is a discharge, cleanse thoroughly and frequently with antiseptic solutions, of which boric acid is the best, and inflate by Politzer's method as soon as the active symptoms subside.

"In all chronic cases thorough cleanliness with antiseptics, and inflation, the removal of growths and any other causes, constitute in general terms the essentials of treatment."

Ear Cough.—In the *Medical and Surgical Reporter*, July 16, 1893, Dr. C. C. Moore reports the following: "In March, 1892, F. L., aged seventy-three years, came to my office for a troublesome winter cough so severe that he could not rest at night. He had not lain down for some months, but slept in the upright position. This cough had been increasing for several winters, and was apparently a case of chronic winter bronchitis of old age. He had not consulted any other physician, though the coughing had been severe for some time. Objectively he was a large, strong man;

respiratory sounds negative, pharynx red, congested from constant coughing, but I could detect no cause for it. Nares clear and mucous membrane healthy. I clearly had a case of reflex cough. I looked in the left ear and it was normal in every way. He protested his hearing was perfect. I put the ear-speculum aside, then thought I would complete the examination and look in the right ear, where a large piece of cerumen that filled the canal was discovered. I removed it with the syringe and warm water. This revived his memory, and he told me that thirty years ago, while driving along a woods, some insect flew into his ear. It annoyed him for about an hour, then suddenly quit; he gave this no more attention, but always thought his hearing was somewhat impaired on that side. Removing this substance cured his cough completely, for more than a year has elapsed since. In the centre of the cerumen was a grain of sand the size of a bird-shot. This had formed the nucleus for cerumen. It had probably been thrown from the carriage-wheel, and caused the sensation like the buzzing of an insect."

DERMATOLOGY.

IN CHARGE OF W. A. HARDAWAY, A.M., M.D.,
Professor of Skin-Diseases in the Missouri Medical College, St. Louis.

ASSISTED BY

C. F. HERSMAN, A.M., M.D.,
St. Louis.

The Relation between Cutaneous Diseases and Affections of the Internal Organs.—Kaposi (*The Medical Week*, March 2, 1894) asserts that, contrary to the general opinion, von Hebra and his followers never pretended that no relation exists between affections of internal organs and skin-diseases. He does not think that acne is as universally associated with digestive troubles as is usually supposed; it is often the expression of a general depression of the nutrition, or the result of cachexy. Some cases of erythema are undoubtedly connected with affections of the uterus or ovaries. Relapsing eczema is ordinarily due to depression of the general nutrition. The author states that he is of the opinion that in chlorotic subjects eczema may give rise to fungoid mycosis. In a case of typical elephantiasis Arabum he was not able to discover filariæ in the blood.

Pigmentation of the Whole Surface with Warty Growths upon the Palms and Soles following the Internal Use of Arsenic.—Carrier (*Medical News*, February 3, 1894) reports the case of a man who had had psoriasis since his youth, and in whom there was also a suspicion of syphilis. After taking baths for a painful affection of the joints and the psoriasis, both troubles having disappeared under the treatment, the psoriasis suddenly returned and with it a chocolate coloration of the whole surface.

The pigment gradually disappeared from the face, hands, and feet. The body is not evenly colored, but small islets of white skin, from a pin's point to a pea in size, are scattered over the surface. The palms and soles were thickly studded with warty growths. Several similar warty growths were found on the backs of the last phalanges. The author thinks the man's condition was due to the long-continued use of arsenic.

Treatment of Diseases of the Nails.—Shoemaker (*New England Medical Monthly*, February, 1894) says that the best local applications in the treatment of atrophy of the nails are fats or oils, and protectives. In order to protect the tender nail-bed a layer of wax or gum may be used. Frequent use of fats has a tendency to increase the local nutrition. The ends of the fingers may be often bathed in olive, almond, cade, or cod-liver oil. Since lanoline is a constituent of keratinous tissue, its use would seem especially indicated. Among remedies which exert a favorable influence the author recommends oleates of lead and zinc. Plasters are often more beneficial than ointments, as they afford protection at the same time that the remedy incorporated is acting.

A Case of Dermatitis Herpetiformis associated with Hyperkeratosis of the Palms and Soles.—McMurray (*The Australasian Medical Gazette*, September 15, 1893) reports a case in which the unusual association of dermatitis herpetiformis with hyperkeratosis of the palms and soles was noted. The patient was a man of thirty years, who had had the skin affection for ten years. The eruption seems to have begun as an urticarial rash followed by the appearance, at intervals of five or six weeks, of erythema, papules, vesicles, and blebs. The keratosis of the palms and soles appeared some time after the development of the dermatitis. He had taken arsenic almost continuously since the disease began. At the time of writing the report the whole integument was affected by a rash made up of vesicles, papules, bullæ, and crusts, the lesions being bilateral and attended by much burning and itching. There was pigmentation of the skin, most marked in the axillæ and inguinal folds. The horny layer of the palms and soles was paler in color and thicker than normal. The lines of the skin of these regions were deeper than usual, and along their borders were situated numerous warty excrescences.

Absorption of Guaiacol by the Skin.—Charrin (*Medical Week*, March 2, 1894) refers to the apparent contradiction to the rule that liquids are not easily absorbed by the skin that is offered by guaiacol, which readily penetrates into the subcutaneous tissues. Guinard and Stourbe have shown that this is due to the fact that the guaiacol is in the state of vapor. The general law for the absorption of substances by the skin is that liquids do not readily traverse the epidermis, while volatile substances readily penetrate.

CLIMATOLOGY.

IN CHARGE OF GUY HINSDALE, M.D.,
Lecturer on Climatology in the University of Pennsylvania, Philadelphia.

Climatic Influences: Mist; Fog. (*National Popular Review*, January, 1894.)—Dr. P. C. Remondino says, "In the Southern California climate there is at times—especially if the day has been a little warmer than usual—a heavy bank of fog that moves inland from the sea. The fog is neither cold nor chilling, nor has it the depressing influences of the relaxing atmospheric moisture of the tropics; it is more in its effects like the mists of Scotland than anything else,—and I take it that the Scotch and Irish who come from the western misty and rainy coasts of their respective countries do not certainly bear any evidences that either rain or mists are debilitating. During the rainiest weather nothing moulds or rots, and in no climate is the salt-cellar so poor a hygrometer."

The Climatology of New Mexico and Arizona. (*Medical News*, February 10, 1894.)—Dr. J. H. Wroth defends these Territories against the charge that heat, dust, the quality of water, and lack of good society are valid objections to the choice of that country as a health-resort. He claims that fruits, vegetables, and all the luxuries of life are attainable at less or at no greater price than they cost in the East. Dr. Wroth believes that syphilis in the Indian population is generally mistaken for tuberculosis, and hence the statements that phthisis is common and fatal among the native population are untrue.

Climates of the United States. Dr. Charles Denison has published (W. T. Keener Co., Chicago, 1893) twelve colored charts, with accompanying statistical tables, which afford a condensed and handy substitute for eleven volumes of the annual reports of the Weather Bureau and Signal Service. These maps are of great value and convenience, and with the tables summarize eight million separate observations. The distribution of atmospheric humidity in the United States is admirably shown in a colored map for each of the four seasons. All the elements of climate are so clearly portrayed that in considering a change of climate nothing could be more helpful to the consultant or more convincing to the patient than Dr. Denison's atlas.

The Texan Monsoons. (Philosophical Society of Washington, February, 1894.) Professor Mark W. Harrington shows that throughout Texas and often far to the northward there is a periodic seasonal wind, the air flowing northward in summer, southward in winter. The latter wind is subject to sudden accessions called "norther," due to cyclonic or anti-cyclonic action. The southerly and southeasterly winds of summer bring

comfort and coolness with them in the very season when most needed. These winds blow from eight to thirteen miles an hour at mid-day, and often continue by night as well; thus they moderate the intense heat of the sun.

Effects of Weather on Scientific Work. (*Science*, February 16, 1894.) Dr. T. D. Crothers finds among brain-workers a settled conviction that many very powerful forces coming from what is popularly called the weather control the work, and its success, of each one. But the majority of persons fail to recognize the sources of error that come directly from atmospheric conditions on experimenters and observers and others. In his own case he has been amazed at the faulty deductions and misconceptions which were made in damp, foggy weather, or on days in which the air was charged with electricity, and thunder-storms were impending. What seemed clear at these times appeared later to be filled with error. An actuary in a large insurance company is obliged to stop work at such times, finding that he makes so many mistakes, which he is only conscious of later, that his work is useless. In a large factory from ten to twenty per cent. less work is brought out on damp days and days of threatening storm. The superintendent in receiving orders to be delivered at a certain time takes this factor into calculation. The psychology of the weather offers a new and interesting field for investigation.

PATHOLOGY.

IN CHARGE OF ALLEN J. SMITH, A.M., M.D.,

Professor of Pathology in the Medical Department of the University of Texas, Galveston, Texas.

The Pathology, Etiology, and Treatment of Gall-stones.—Dr. E. M. Brockbank, of Manchester, England (*Medical Chronicle*, November and December, 1893), publishes an interesting study of the manner of occurrence of gall-stones. Regarding cholesterin as by far the most important constituent of gall-stones, reaching sometimes as high a proportion as ninety or more per cent., the writer seeks to inquire into the conditions of its crystallization and deposit in the biliary area. Cholesterin is generally believed to occur in the bile as a normal product of the mucous membrane of the gall-passages, even in the finest ramifications, and is not dependent upon the action of the liver at all. Catarrhal conditions of the mucous membrane increase the amount present. From observation of collections of cholesterin in the mucous membrane of the bile-duct in one of the cases examined, the author is disposed to believe that the cholesterin is derived from the cells lining the glands in the membrane. The writer states that by far the most important factors in preservation of the solution of cholesterin in the bile are the bile salts, the taurocholate and glycocholate of sodium. When cholesterin

occurs in crystalline form in the bile it is probable that there has occurred some failure of the normal relation between the amounts of these substances present, either the cholesterin having been formed in abnormally large amount, the bile salts having failed of proportionate formation, or, the cholesterin being of normal quantity, an insufficient amount of bile salts has been secreted to dissolve it. It is possible, but, in the writer's opinion, improbable, that the precipitation of the cholesterin may be dependent upon the presence of some adventitious bodies, as micro-organisms. This view of the importance of a disproportion between the amounts of cholesterin and the bile salts is supported clinically by the nature of the affections in which biliary calculi are most likely to be found. The conditions favorable to the excessive formation of cholesterin occur in states of passive hyperæmia of the gall-bladder from portal stasis, from cardiac or hepatic origin. The same affections are apt, from organic or from functional hepatic faults, to favor a deficient formation of the bile salts. The connection between lithiasis and biliary calculus formation, long since pointed out, probably depends upon the abnormal condition of the liver in these cases, deranging the normal processes by which urea and the bile salts are formed, or to the fact that there occurs too little non-nitrogenous matter in the diet of these persons to form sufficient bile salts to dissolve the cholesterin. Thus it is possible that in the formation of uric acid in gouty conditions some of the glycin which should go to the formation of glycocholate of sodium combines with urea to the formation of a forerunner of uric acid (Latham's theory), and thus results in a diminution of the bile salt in question. Or, it may be that the same pathological condition of the liver, causing an imperfect urea formation, also prevents the proper production of the bile salts.

Dr. Brockbank, watching the changes in the bile after death, noted that in it at first no cholesterin can be seen, but that there are usually present large numbers of the epithelial cells of the mucous membrane of the gall-bladder. After about ten days small irregularly lobulated masses of an opaque, amorphous substance appear, and collections of small myelin bodies. Later on small clumps of cholesterin crystals may be found, the lobulated masses increase in number, and the epithelial cells decrease. After about four or six weeks the cholesterin crystals become very much increased in number and the amorphous masses and the cells less profuse. These amorphous bodies and myelin bodies appear very similar to bodies which result when cholesterin crystals are treated with a weak solution of soap (not a calcium soap). These soap bodies are especially of interest in that they quite readily break up in water, with deposit of crystals of the cholesterin. The author suggests, after observation of these similarities, that in the body the cell protoplasm is composed of some highly organized substance of organic nature, and perhaps potassium or sodium together with other inorganic matter. While living it retains its constitution, but when dead it splits up into some less highly constituted substance, cholesterin, and a low fat, which combines

with the potassium or sodium to form a soap. The cholesterin and this soap unite to form the myelin bodies seen in the bile post mortem and in the fluid of cysts; and later on these, under the influence of the water present, break up, the cholesterin being deposited in a crystalline form.

In life probably the same process prevails. Shed epithelium falls into the bile, and there for some reason remains for sufficient time for the same changes to occur. The longer the bile remains in the bladder the greater the amount of cholesterin formed. Conditions favoring the retention of the bile, therefore, play an important *rôle* in the development of biliary calculi, as want of exercise, collections of fæces in the flexure of the colon pressing on the cystic duct, depression of the fundus of the bladder from distention or from corset lacing, catarrhal conditions of the duct, etc. When the cell has remained in the bile for a time it breaks up into fatty detritus, from which cholesterin forms, or it is transformed into the myelin bodies which subsequently change into crystals. Were there sufficient bile salts no crystals would form; but in their deficiency crystals are deposited, tending to grow together in clusters. Over these clusters cell-detritus, bile-pigment, and mucin collect; the mass settles to the bottom of the bladder, more crystals form around it, and the calculus is gradually formed. The author considers at some length the causes predisposing to biliary stagnation in the gall-bladder, and devotes considerable attention to questions of treatment as well as of pathology.

REVIEW OF ITALIAN, SPANISH, AND PORTUGUESE MEDICINE.

IN CHARGE OF A. M. FERNANDEZ DE YBARRA, M.D.,
New York,
Corresponding Member of the Medico-Chirurgical Academy of Madrid, Spain, the Argentine Medical Circle of Buenos Ayres, South America, and the Society for Clinical Studies, of Havana, Cuba; Executive Assistant Secretary-General of the First Pan-American Medical Congress.

Cæsarean Section with Amputation of the Uterus and Ovaries. (*La Puglia Medica*, Baré, June, 1893.) By Dr. Filippo Baldassarra.

The above operation was performed upon A. R., twenty-six years old; height, one metre thirty centimetres; head large, neck short. She is of a rachitic constitution; has a lumbar curvature of the vertebral column; the femurs are arched, with the convexity outward, and the legs show a tendency to talipes valgus. She did not walk until her fifth year. Menstruation began at the age of twelve, and has always been regular. She married at twenty-two, and became pregnant fifteen months later.

Labor began at full term, but the pains proved ineffectual at the end of the second day, when Baldassarra first saw the case. He found the os fully dilated, the membranes ruptured, the fœtus in vertex presentation, with the head freely movable; the fœtal heart-beat was not discernible, and move-

ment had not been felt since the night before. The pelvic measurements were as follows:

	Centimetres.
External conjugate of Baudelocque	13½
Conjugata vera	5
Right diagonal	19
Left diagonal	18
Iliac crests	23
Tip of coccyx to inferior margin of pubic symphysis	10
Tuber ischii	9½

Craniotomy with Blot's perforator and Ovard's cranioclast was followed by evisceration by Fabbri's method.

The next year the woman became pregnant, but miscarried at the fifth month. Ten months later she was a third time *enceinte*. The author advised the induction of premature labor, but the patient would not consent to it. Labor began at full term, and continued three days. Dr. Baldassarra then found the membranes ruptured, the child alive, and in podalic presentation. Symphyseotomy was not allowable on account of the malformation of the pelvis. Cæsarean section was decided upon, and performed by Porro's method, amputating the uterus and both ovaries at the same time. The child was extracted in good condition. The pedicle was fastened to the abdominal wall by a stylet passed transversely through the uterine stump. A small suppurating focus in the pedicle caused a rise of temperature to 38.2° C. on the fifth day. This was washed in a three-per-cent. solution of boric acid, and a concentrated solution of perchloride of iron was applied to the pedicle. A two-per-cent. solution of carbolic acid was used each day, and the pedicle was dusted with a mixture of powdered charcoal, camphor, and iodoform. On the twentieth day after the operation the pedicle fell off, leaving a small purulent spot. A fine elastic catheter was passed through the wound to the vagina, and a drainage-tube inserted, which extended from the vulva through the abdominal wound. Then, by washing out the fistulous tract and gradually shortening the drainage-tube, healing took place, and the patient left the hospital entirely cured two months after the operation.

FORENSIC MEDICINE.

IN CHARGE OF LORENZO D. BULETTE,
Of the Philadelphia Bar.

MEDICAL ACT OF PENNSYLVANIA.[1]

WHEREAS, The safety of the public is endangered by incompetent physicians and surgeons, and due regard for public health and the preservation of human life demands that none but competent and properly qualified physicians and surgeons shall be allowed to practice their profession.

§ 1. *Be it enacted, etc.*, That there shall be established a Medical Council of Pennsylvania, consisting of the Lieutenant Governor, the Attorney-General, the Secretary of Internal Affairs, the Superintendent of Public Instruction and the President of the State Board of Health and Vital Statistics, and the Presidents of the three State Boards of Medical Examiners provided for in this act.

§ 2. The said Council shall be known by the name and style of the Medical Council of Pennsylvania, and may make and adopt all necessary rules and regulations and by-laws not inconsistent with the Constitution and the laws of this Commonwealth, or of the United States, and shall have power to locate and maintain an office within this State for the transaction of business; five members of the said Council shall constitute a quorum for the transaction of business.

§ 3. The said Council shall organize at Harrisburg within ten days from the date of the organization of three boards of medical examiners, and shall elect from its own number a president and a secretary who shall also act as treasurer, both of whom shall hold their offices for one year, or until their successors are chosen.

§ 4. The members of the said Council shall receive no salary, except the Secretary and Treasurer who shall receive a salary of not over five hundred dollars, and who shall file with the President of the Council a bond in the sum of one thousand dollars conditioned for the faithful performance of his duties. The necessary expenses of the said Council shall be paid out of the appropriation made in section sixteen of this Act, and any balance remaining from the appropriation after the disbursements herein specified shall be paid into the Treasury of the Commonwealth.

§ 5. The said Medical Council shall hold two stated meetings in each year at Harrisburg and may hold special meetings at such times and places as it may deem proper. It shall supervise the examinations conducted by the three State Boards of Medical Examiners of all applicants for license to practise medicine and surgery in this Commonwealth, and shall issue licenses to practise medicine and surgery to such applicants as have presented satisfactory and properly certified copies of licenses

[1] Entitled "An act to establish a Medical Council, and three State Boards of Medical Examiners, to define the powers and duties of said Medical Council and said State Boards of Medical Examiners, to provide for the examination and licensing of practitioners of medicine and surgery, to further regulate the practice of medicine and surgery, and to make an appropriation for the Medical Council." Approved May 18, 1893.

from State Boards of Medical Examiners, or State Boards of Health of other States, as provided for in Section Thirteen of this Act, or as have successfully passed the examination of one of the three State Boards of Medical Examiners, but all such examinations shall be made by the State Boards of Medical Examiners established in Section Six of this Act. And the said Medical Council shall have no power, duty or function, except such powers, duties and functions as pertain to the supervision of the examinations of applicants for licenses to practise medicine and surgery and to the issuing of licenses to such applicants as have successfully passed the examination of one of the State Boards of Medical Examiners, or have presented satisfactory and properly certified copies of licenses from State Boards of Medical Examiners, or State Boards of Health of other States, as provided for in Section Thirteen of this Act.

§ 6. It is further enacted, that from and after the first day of March, Anno Domini one thousand eight hundred and ninety-four, there shall be and continue to be three separate boards of medical examiners for the State of Pennsylvania, one representing the Medical Society of the State of Pennsylvania, one representing the Homœopathic Medical Society of the State of Pennsylvania, one representing the Eclectic Medical Society of the State of Pennsylvania.

Each board shall consist of seven members, and each of said members shall serve for a term of three years from the first day of March next after his appointment, with the exception of those first appointed, who shall serve as follows namely: Two of each board for one year, two of each board for two years, and three of each board for three years, from the first day of March, Anno Domini one thousand eight hundred and ninety-four.

The governor shall appoint the members of said boards of examiners, respectively, from the full lists of the members of the said medical societies, which lists shall, on or before the first day of January, one thousand eight hundred and ninety-four, and annually thereafter, be transmitted to the governor under the seal and signed by the secretary of the society so nominating. From these lists of nominees respectively the governor shall, during the month of January, Anno Domini one thousand eight hundred and ninety-four, appoint three separate boards of medical examiners, each board to be composed exclusively of members of the same medical society. In case of failure of any or all of said medical societies to submit lists, as aforesaid, the governor shall appoint members in good standing of the corresponding society, or societies, entitled to nominate without other restriction. Each one of the said appointees must be a registered physician in good standing and shall have practised medicine or surgery under the laws of this State for a period of not less than ten years prior to such appointment.

The governor shall fill vacancies, by death or otherwise, for unexpired terms of said examiners from the respective lists submitted by the said medical societies, and may remove any member of any of said boards for continued neglect of the duties required by this act, or on recommendation of the medical society of which said members may be in affiliation, for unprofessional or dishonorable conduct.

The governor shall in his first appointments designate the number of years for which each appointee shall serve. The appointments of successors to those members whose term of office will expire on the first day of March of each year shall be made by the governor during the month of January of such year, upon the same conditions and requirements as hereinbefore specified with reference to the appointment of three separate examining boards, each to be composed exclusively of members of the same medical school and society as hereinbefore provided.

§ 7. Said boards shall be known by the name and style of Boards of Medical Examiners of the State of Pennsylvania. Every person who shall be appointed to

serve on either of said boards shall receive a certificate of appointment from the secretary of the commonwealth.

Each of said boards shall be authorized to take testimony concerning all matters within its jurisdiction, and the presiding officer for the time being of either of said boards, or of any of the committees thereof, may issue subpœnas and administer oaths to witnesses. Each of said boards of examiners shall make and adopt all necessary rules, regulations and by-laws, not inconsistent with the constitution and laws of this State, or of the United States, whereby to perform the duties and transact the business required under the provisions of this act; said rules, regulations and by-laws to be subject to the approval of the Medical Council of Pennsylvania established by this act.

§ 8. From the fees provided by this act the respective boards may pay, not to exceed said income, all proper expenses incurred by its provisions, and if any surplus above said expenses shall remain at the end of any year it shall be apportioned among said examiners *pro rata* according to the number of candidates examined by each: *Provided*, that the medical council shall keep separate accounts of all fees received from physicians applying for licenses to practise medicine and surgery and shall not devote any such fees to the uses of the council, or to the uses or remuneration of any other examining board than that of the society with which the physician who pays the fee wishes to be affiliated.

§ 9. The first meeting of each of the examining boards respectively shall be held on the first Tuesday of April, one thousand eight hundred and ninety-four, suitable notice in the usual form being given with the notice of their appointment by the secretary of the commonwealth to each of the members thereof, specifying the time and place of meeting.

At the first meeting of each of the boards respectively an organization shall be effected by the election, from their own membership, of a president and secretary. For the purpose of examining applicants for license each of said boards of medical examiners shall hold two or more stated or special meetings in each year, due notice of which shall be made public at such times and places as they may determine. At said stated or special meetings a majority of the members of the board shall constitute a quorum thereof, but the examination may be conducted by a committee of one or more members of the board of examiners duly authorized by said boards.

§ 10. The several boards of medical examiners shall, not less than one week prior to each examination, submit to the Medical Council of Pennsylvania questions for thorough examinations in anatomy, physiology, hygiene, chemistry, surgery, obstetrics, pathology, diagnosis, therapeutics, practice of medicine and materia medica; from the lists of questions so submitted the council shall select the questions for each examination, and such questions for each examination shall be the same for all candidates, except that in the departments of therapeutics, practice of medicine and materia medica, the questions shall be in harmony with the teachings of the school selected by the candidate.

§ 11. Said examinations shall be conducted in writing in accordance with the rules and regulations prescribed by the Medical Council of Pennsylvania and shall embrace the subjects named in section ten of this act. After each such examination the board having charge thereof shall, without unnecessary delay, act upon the same. An official report of such action signed by the president, secretary and each acting member of said board of medical examiners, stating the examination, average of each candidate in each branch, the general average and the result of the examination, whether successful or unsuccessful, shall be transmitted to the medical council.

Said report shall embrace all the examination papers, questions and answers thereto. All such examination papers shall be kept for reference and inspection for a period of not less than five years.

§ 12. On receiving from any of said boards of medical examiners such official report of the examination of any applicant for license, the medical council shall issue forthwith to each applicant who shall have been returned as having successfully passed said examination, and who shall have been adjudged by the medical council to be duly qualified for the practice of medicine, a license to practise medicine and surgery in the State of Pennsylvania. The medical council shall require the same standard of qualifications from all candidates, except in the departments of therapeutics practice of medicine and materia medica, in which the standard shall be determined by each of the boards respectively. Every license to practise medicine and surgery issued pursuant to this act shall be subscribed by the officers of the medical council and by each medical examiner who reported the licentiate as having successfully passed said examinations. It shall also have affixed to it by the person authorized to affix the same, the seal of this commonwealth.

Before said license shall be issued it shall be recorded in a book to be kept in the office of the Medical Council, and the number or the book and page therein containing said recorded copy shall be noted upon the face of said license. Said records shall be open to public inspection, under proper restrictions as to their safe keeping, and in all legal proceedings shall have the same weight as evidence that is given to the conveyance of land.

§ 13. From and after the first day of July, Anno Domini one thousand eight hundred and ninety-four, any person not theretofore authorized to practise medicine and surgery in this State, and desiring to enter upon such practice, may deliver to the secretary of the medical council, upon the payment of a fee of twenty-five dollars, a written application for license, together with satisfactory proof that the applicant is more than twenty-one years of age, is of good moral character, has obtained a competent common school education, and has received a diploma conferring the degree of medicine from some legally incorporated medical college of the United States, or a diploma or license conferring the full right to practise all the branches of medicine and surgery in some foreign country; applicants who have received their degree in medicine after the first day of July, one thousand eight hundred and ninety-four, must have pursued the study of medicine for at least three years, including three regular courses of lectures, in different years, in some legally incorporated medical college, or colleges, prior to the granting of said diploma, or foreign license, and after the first day of July, eighteen hundred and ninety-five, such applicants must have pursued the study of medicine for at least four years, including three regular courses of lectures, in different years, in some legally incorporated medical college, or colleges, prior to the granting of said diploma or foreign license. Such proof shall be made, if required, upon affidavit. Upon the making of said payment and proof the medical council, if satisfied with the same, shall issue to said applicant an order for examination before such one of the State Boards of Medical Examiners as the applicant for license may select. In case of failure at any such examination the candidate, after the expiration of six months and within two years, shall have the privilege of a second examination by the same board to which application was first made without the payment of an additional fee: *And it is further provided*, That applicants examined and licensed by State Boards of Medical Examiners or State Boards of Health of other States, on payment of a fee of fifteen dollars to the medical council, and on filing in the office of the medical council a copy of said license certified by the affidavit of the president or secretary of such board showing also that the standard of acquirements adopted by said State Board of Medical Examiners or State Boards of Health is substantially the

same as is provided by sections eleven, twelve and thirteen of this act, shall without further examination receive a license conferring on the holder thereof all the rights and privileges provided by sections fourteen and fifteen of this act.

§ 14. From and after the first day of March, Anno Domini one thousand eight hundred and ninety-four, no person shall enter upon the practice of medicine or surgery in the State of Pennsylvania, unless he or she has complied with the provisions of this act, and shall have exhibited to prothonotary of the Court of Common Pleas of the county in which he or she desires to practise medicine or surgery, a license duly granted to him or her as hereinbefore provided, whereupon he or she shall be entitled upon the payment of one dollar to be duly registered in the office of the prothonotary of the Court of Common Pleas in the said county, and any person violating any of the provisions of this act shall be guilty of a misdemeanor, and upon conviction thereof in the Court of Quarter Sessions of the county wherein the offence shall have been committed, shall pay a fine of not more than five hundred dollars for each offence.

§ 15. Nothing in this act shall be construed to interfere with or punish commissioned medical officers serving in the army or navy of the United States, or in the United States Marine Hospital service while so commissioned, or medical examiners of relief departments of railroad companies while so employed, or any one while actually serving as a member of the resident medical staff of any legally incorporated hospital, or any legally qualified and registered dentist exclusively engaged in the practice of dentistry, or shall interfere with or prevent the dispensing and sales of medicines or medical appliances by apothecaries, pharmacists, or interfere with the manufacture of artificial eyes, limbs or orthopædical instruments or trusses of any kind for fitting such instruments on persons in need thereof, or any lawfully qualified physicians and surgeons residing in other States or countries, meeting registered physicians of this State in consultation or any physician or surgeon residing on the border of a neighboring State and duly authorized under the laws thereof to practise medicine and surgery therein whose practice extends into the limits of this State: *Provided*, that such practitioner shall not open an office, or appoint a place to meet patients or receive calls, within the limits of Pennsylvania, or physicians duly registered in one county of this State called to attend cases in another county but not residing or opening an office therein. And nothing in this act shall be construed to prohibit the practice of medicine and surgery within this Commonwealth by any practitioner who shall have been duly registered before the first day of March, Anno Domini one thousand eight hundred and ninety-four, according to the terms of the act, entitled "An act to provide for the registration of all practitioners of medicine and surgery," approved the eighth day of June, Anno Domini one thousand eight hundred and eighty-one, and one such registry shall be sufficient warrant to practise medicine and surgery in any county in this Commonwealth.

§ 16. The sum of two thousand dollars is hereby appropriated out of any moneys in the State Treasury not otherwise appropriated for the salary of the secretary and treasurer of said medical council and the necessary expenses of said council, one thousand dollars thereof for the year beginning January one, one thousand eight hundred and ninety-four, and one thousand dollars thereof for the year beginning January one, one thousand eight hundred and ninety-five.

§ 17. All acts or parts of acts of Assembly inconsistent herewith shall be and are hereby repealed.

BOOK REVIEWS.

INTERNATIONAL CLINICS: A QUARTERLY OF CLINICAL LECTURES ON MEDICINE, NEUROLOGY, PEDIATRICS, SURGERY, GYNÆCOLOGY, OPHTHALMOLOGY, LARYNGOLOGY, OTOLOGY, AND DERMATOLOGY. By Professors and Lecturers in the Leading Medical Colleges in the United States, Great Britain, and Canada. Edited by John M. Keating, M.D., LL.D., Judson Daland, M.D., J. Mitchell Bruce, M.D., F.R.C.P., and David W. Finlay, M.D., F.R.C.P. Volume III., Third Series, 1893. Philadelphia: J. B. Lippincott Co.

The third volume of the third series of the International Clinics is a book of three hundred and fifty-six pages, containing forty-eight clinical lectures, contributed by thirty-six American, ten British, and two French authors, and distributed as follows among the different departments: Medicine, twelve; neurology, seven; pediatrics, two; general surgery, nine; genito-urinary surgery, three; gynæcology, six: ophthalmology, two; laryngology and otology, four; and dermatology, three. The list of contributors includes such well-known names as Ashhurst, Budin, Byford, Gerster, Goodell, Goodhart, Haig, Hamilton, Henry, Lefferts, Macdonald, Mills, Mundé, Sachs, Tuffier, Tyson, and Willard.

The notable lectures in the section on medicine are those delivered by Dr. G. A. Gibson, of Edinburgh, on pernicious anæmia; by Dr. A. T. Davies, of London, upon the treatment of myxœdema; by Dr. A. Haig, of London, on the pathology and treatment of asthma; by Dr. Thomas Oliver, of Newcastle-on-Tyne, on blood-spitting as a symptom; by Dr. I. N. Danforth, of the Northwestern University Medical School, on the use of turpentine in typhoid fever; and by Dr. W. H. Porter, of New York, on acute and chronic nephritis. Taking the medical lectures as a group, perhaps the most evident fault of the contributions as educational endeavors is the failure to lay sufficient stress upon the relations which exist in every case of disease between the anatomical alterations and the perverted physiology, the symptomatology, of the malady. The lecture delivered by Dr. I. E. Atkinson, of Baltimore, upon œdema, is an admirable one, the lecturer pursuing the symptom in a logical and sequential way from its origin in lymphatic and venous insufficiency in connection with inflammatory, cardiac, renal, and obstructive lesions. So, too, the lecture of Dr. Davies, of London, upon the use of thyroid extract in the treatment of myxœdema, is worthy of special attention. The author, after relating the origin and development of the treatment of myxœdema by thyroid extract, discusses briefly its mode of action, then calls attention to the allied subjects of treatment of wasting diabetes by pancreatic extract, and the use of adrenal extract in Addison's disease, describes the various modes of preparation of the remedial agent, and finally reviews rapidly the important points in the history of myxœdema. Dr. Alexander Haig's lecture on the pathology and treatment of asthma is an adaptation of his well-known views upon the uric-acid diathesis to spasmodic asthma, which he would thus place in the same category as gout, the migraine of the gouty condition, as well as epilepsy and other disorders, which he regards as depending upon auto-intoxication from insufficiency of the urinary excretion.

In the neurological department of the volume an interesting discussion of the nature of epilepsy opens the section. The author, Dr. J. Wallace Anderson, of Glasgow, holds that there is "no single, definite, invariably recurring abnormality of tissue" demonstrable in cases of epilepsy, but that there are two essential factors in its production,—"*an abnormal susceptibility of the individuals to impressions, and the*

impressions themselves." This susceptibility, instability of the organism, cannot be located; it finds its expression through the nervous system in various ways, perhaps in no more frequent manner than is expressed commonly by the term, "lack of tone," in relation to disorder of the stability of this or that structure. In Dr. Charles K. Mills's lecture upon a group of cases illustrative of various forms of cranial and brachial paralysis, there occurs again an exquisite series of pictures from Blockley's nervous wards, a treasure-house of terminal nervous disease already known to the readers of the Clinics through the well-illustrated articles of Drs. Dercum and Lloyd in previous volumes. Dr. Sachs, of New York, publishes an interesting account of a case in which, following a penetrating wound of the neck below the left ear, there remain evidences of an organic hemiplegia, together with a peculiar nervous reflex of the nature of a forced inspiration with a snort-like expiration whenever the scar in his neck is touched. This reflex, he believes, was originally caused by implication of peripheral portions of the ninth nerve; at present, while it is probable that this peripheral irritation has passed away, the reflex has become more or less of a habit, and is excited by the very slightest cause, even by suggestion, perhaps. The author employs the case to call attention to a relationship existing between actual organic trouble, shown by the hemiplegia with increased patellar reflex, ankle clonus, increased wrist reflex on the right side of the body, and implication of several of the cranial nerves on the left, and a hemianæsthesia of the right side of the body, with anæsthesia of the left side of the tongue and upper portion of the face and head. The hemianæsthesia the author regards as a functional symptom of the kind so often met in "traumatic neuroses;" and the relation between the organic and functional disturbances the author emphasizes sufficiently by his title "'traumatic neuroses,' a catch word." The best of the nervous lectures is that of Dr. Wharton Sinkler, of Philadelphia, upon syringomyelia; it includes a full discussion of the various phenomena of the affection, and is based upon four cases, two of which are narrated together with a description of the post-mortem findings in each. The other two patients were exhibited before the class. The author speaks of Morvan's disease as a variety of syringomyelia, a view generally accepted, it is true; it should not be forgotten, however, that many cases of so-called Morvan's disease are really instances of anæsthetic leprosy. A case of this sort has but recently come within the reviewer's experience.

In the section on pediatrics there are but two lectures, both excellent ones, the first upon empyema, by Dr. J. F. Goodhart, of London; the second, a comprehensive discussion of the hygiene of early infancy, by Dr. F. S. Parsons, of Boston.

The growing length of this review prevents any extended notice of the articles in the surgical section. There are a number of very interesting and satisfactory descriptions of cases, among which should be mentioned the account of a case of perinephral abscess, by Dr. Booth, of Aberdeen, Scotland, that of a case of popliteal aneurism, by Dr. J. B. Hamilton, of Chicago, that of a perforating wound of the rectum and bladder, by Dr. Roswell Park, of Buffalo, and that of a deep, fatty tumor simulating a sarcoma, by Dr. E. Andrews, of Chicago. Besides, there are included in this section several well-considered discussions of surgical subjects, among which should be named the article of Dr. G. W. Gay, of Boston, upon the management of patients during critical operations. This criticism of the surgical section may be appropriately made,—namely, that in publishing surgical clinics it ought never to be forgotten that the reader cannot see the condition of affairs, and that therefore the remarks of the lecturer should always be supplemented in the text by sufficient description to give a complete notion of the state of the patient as well as the points which bear upon the determination of the diagnosis and treatment. It is insufficient to say, "As you see, gentlemen, we have here the deformity characteristic of this or that variety of fracture," or, "You may notice I pass this sound with some difficulty;" the deformity should be detailed for the reader, and the difficulty

in passage of the bougie should be described, otherwise these published lectures become mere catalogues of the cases shown or operated upon before the class.

Dr. Tuffier, of Paris, leads the section on genito-urinary surgery with a lecture illustrative of the serious consequences liable to ensue in cases of chronic urethritis of the male; infection of the female, with its results, orchitis, prostatitis, cystitis, nephritis, occasionally a general infection, and gonorrhœal rheumatism. Dr. F. P. Henry, of Philadelphia, follows with a kindred discussion as to the mode of development of gonorrhœal rheumatism, detailing the history of a case presented as the basis for his remarks.

The gynæcological section may be said to be always good,—a remark which may usually be extended to the section on neurology. In the present volume, of especial interest in a gynæcological sense are the lectures of Dr. Skene, on pelvic cellulitis, and of Dr. Byford, descriptive of the vaginal operation for oöphorectomy; and Professor Budin's consideration of the relations between the uterus and intestines is highly suggestive of important points in the care of the pregnant woman or of the woman with pelvic disease.

In the special sections are represented the various special departments of practice,—ophthalmology by a lecture by Dr. W. O. Moore, of New York, on purulent conjunctivitis, and by a very excellent and comprehensive lecture upon cataract, by Dr. F. B. Tiffany, of Kansas City; otology and laryngology by a lecture on the treatment of acute and subacute laryngitis, by Dr. G. Macdonald, of London; by an article upon tubercular laryngitis, by Dr. Fletcher Ingalls, of Chicago; by one upon chronic hypertrophy of the tonsils, by Dr. G. M. Lefferts, of New York; and by one upon a case of middle-ear inflammation, and upon a case of myringitis, by Dr. B. Alexander Randall, of Philadelphia; while dermatology is represented by a characteristically interesting and excellent article upon skin tuberculosis by Dr. A. H. Ohmann-Dumesnil, of St. Louis; by a lecture upon causes of dermal syphilis, alopecia areata, and psoriasis, by Dr. H. G. Piffard, of New York, and by a description of that rare affection, hæmatidrosis, by Dr. M. B. Hutchins, of Atlanta.

It must not be supposed, because the reviewer has taken occasion to suggest improvements in the get-up of these clinical articles, that the present volume is in any way inferior to the preceding ones, or that the series does not fulfil the high expectations as to usefulness. Quite the opposite. No series of publications has been issued within many years more worthy of thorough support by the profession, and the present is the peer of any of the preceding volumes. The suggestions made have been offered only with a view of stimulating the purpose to make the *International Clinics* not simply a repository of various interesting histories, but, in addition, to make the description of the cases related as nearly as possible a complete substitute for actual attendance upon clinical lectures, and thus to bring the mass of the profession in closer relations with medical teachers. A. J. S.

A Practical Treatise on Medical Diagnosis for Students and Physicians. By John H. Musser, M.D., Assistant Professor of Clinical Medicine in the University of Pennsylvania, Philadelphia; President of the Pathological Society of Philadelphia, etc. Octavo, 873 pages, 162 engravings, and 2 colored plates. Cloth, $5.00; leather, $6.00. Philadelphia: Lea Brothers & Co., 1894.

For many years the American physician and medical student have had but few text-books on clinical diagnosis or clinical medicine. Finlayson's Clinical Manual has always been the favorite as a text-book, and to-day is one of the best books of its class in any language. Of late years the translation of Von Jaksch's Clinical Diagnosis and Vierordt's Medical Diagnosis has added to the list of practical text-books for students and those interested in laboratory work.

Dr. Musser's work on Clinical Medicine strives to contain the results of the latest and best scientific research. He has treated morbid manifestations in a dual

way, by taking up the subjective symptoms or information elicited by inquiry, and the objective symptoms, conditions ascertained by the physical examination of the patient, and the varied examinations of the fluids, gastric, cystic, etc., which are to be carried out in the laboratory, either clinical or bacteriological. This coalescence of information secured by inquiry and examination brings out more clearly to the student the nature of the altered function or morbid process. It is the only method upon which careful work can be based.

The book is divided into two parts. Part first is devoted to general diagnosis. Here the reader will find a very good chapter on pain, one which will be extremely useful to the student; the chapter on bacteriological methods is short, concise, and good; that on morbid processes and their symptomatology is not distinctly classified, infiltrations and degenerations being lumped under the one heading, Degeneration. Hyaline degeneration is not mentioned.

Part second, devoted to special diagnosis, is full of interest to the reader. The chapter on diseases of the stomach, intestines, and peritoneum is especially valuable to the practitioner. The chemical and microscopical examination of the gastric contents is a subject with which all practitioners should be familiar; the various methods are well stated in their appropriate chapter. Appendicitis and its diagnosis is mapped out clearly. It is considered "by far the most important affection of the intestinal tract. Clinically all forms of appendicitis should be considered due to purulent inflammation, as the staphylococcus or streptococcus." This is good, strong reasoning and a statement ringing with truth, although some practitioners may not accept it. In the chapter on specific diseases diphtheria is considered at length. The importance of the absence of the knee-jerk early in the disease is insisted upon, also the fact that the diagnosis is not accurate without a bacteriological examination of the membrane. Under this head there is no mention of the usefulness of the boiled white of an egg as an excellent culture medium; this is a good practical point for practitioners.

The reader does not find any mention of the protozoa or coccidia as the possible causative factor of cancer.

There are very few typographical errors. On page 24, promptly is spelled "promply." In the description of the Thoma-Zeiss hæmocytometer, it is stated that "double lines mark out large squares, containing twenty-five smaller squares," page 686. This statement is controverted by the illustration on the opposite page, in which you can count but sixteen squares between these double lines.

The illustrations are somewhat disappointing; there are but few original photographs. Most of the illustrations are taken from well-known sources, which are duly acknowledged. One of the best is that of malarial organisms, page 767, taken from Golgi.

The book should receive a hearty reception from students and medical men; it contains much information essential to good, scientific medical work. It is with pleasure that we can state that the work has been adopted as a text-book at the Johns Hopkins Medical School and Harvard University, and that it has met with marked approval in other teaching centres. J. A. S.

An American Text-Book of the Theory and Practice of Medicine. By William Pepper, M.D., LL.D. In two volumes. Illustrated. Volume two. Philadelphia: W. B. Saunders, 1893.

The first volume of this work received the universal approbation of the profession, so much so that the second volume was looked for somewhat impatiently. It is a beautiful example of the bookmaker's art, and contains 999 pages of text-matter, while the index occupies 45 additional pages. The letter-press is excellent and the general make-up good. The illustrations are well executed, especially the colored plate illustrating the various forms of leucocytes. The colored illustration of Addison's disease produces a somewhat striking impression, and it would seem that the

artist employed his blue pigment with a rather too generous hand. The seventy-six figures have been selected with great care and judgment, and will prove of great assistance to the reader.

The chapter upon the general considerations pertaining to the pathology of bacteria, infection, and immunity, by Dr. William H. Welch, is a masterpiece of thoughtful work, based upon enormous experience. The judicial manner in which the evidence is presented is especially gratifying. The statement that, although in old cultures and unfavorable media *most* of the misshapen bacteria are involution forms, but that *some* are not, opens a new and promising field of inquiry. Infection is described as a morbid condition caused by the entrance and growth within the body of pathogenic micro-organisms, and due to the act or process by which disease is caused, and may be localized or general, and a contagious disease as one capable of communication from one individual to another by means of direct or immediate contact. As he has so well stated, the meaning of these two words is so imperfect, in the light of our new knowledge, that it would be wiser to discard them. Attention is directed to the effects upon the human organism of toxic substances produced by or accompanying bacteria, and a very excellent description is given of those obtained from diphtheria and tetanus. The chapter on immunity will attract attention, and is an excellent *résumé* of our present knowledge of this most attractive subject.

The diathetic diseases assigned to Dr. Henry M. Lyman occupy 111 pages. Many of the articles appear brief, but for a text-book this is a decided advantage, particularly as there are no important omissions.

Diseases of the blood have been treated in that thorough, yet concise manner so characteristic of the writings of Dr. William Osler. He believes that in the adult the red corpuscles are formed almost entirely from the nucleated red marrow cells by the extrusion of the nucleus. In this opinion the majority of recent observers concur. Clear and accurate descriptions of the methods of examining the blood and of the instruments used for hæmatological examinations are given, which aid materially in the comprehension of the subject matter. The various blood diseases then follow in their proper order, and the description of idiopathic pernicious anæmia is especially good. Figures eight, nine, and eleven are especially valuable, indicating in a graphic manner, as they do, the results of a long series of hæmoglobin, white and red blood-cell estimations, so arranged that, at the same time, a comparative study may be made.

One naturally turns with great interest to the work of the well-known editor, and it is with pleasure we note that more than 325 pages are from the pen of this gifted author and teacher, 125 pages more than in the first volume. The diseases of the heart and blood-vessels are written in his customary clear and concise manner, and one finds the latest addition to our knowledge upon these subjects carefully stated. The treatment of each disease is gone into fully, and contains much that is valuable, not only to the student, but also to the practitioner. In the opening chapter on diseases of the stomach the author very wisely remarks that catarrhal gastritis should be restricted to those diseases where the orifices of the glands are alone involved, and that, inasmuch as instances of catarrhal inflammation are present in most inflammatory affections of the stomach, the term gastritis is preferred. The articles on gastric ulcer and carcinoma are particularly good, and the author is at his best in the section devoted to diagnosis and treatment.

Unfortunately, space will not permit of an extended review of the excellent work done by James C. Wilson in the section of diseases of the nose, larynx, bronchi, and pleura. The chapters devoted to diseases of the bronchi and pleura are particularly noteworthy.

Dr. Francis Delafield, in discussing the treatment of acute croupous pneumonia, does not give it that full attention its importance demands, and the value of venesection, and the indications for its use, are not pointed out with that clearness that

one would expect in a text-book of this character. So, too, the section on diseases of the kidneys demands a rather more extended discussion, from the frequency of these maladies.

Diseases of the peritoneum, liver, and pancreas are from the pen of Dr. Reginald H. Fitz, and have been placed in good hands. The article on acute peritonitis shows skilful handling of a difficult subject, and the section on etiology is particularly valuable. The article on pancreatic diseases will amply repay careful reading, as it would be impossible to bring together a larger number of valuable facts in so short a space. J. D.

Messrs. William Wood & Co. announce the publication of the first volume of a work on Medical Jurisprudence, Forensic Medicine, and Toxicology. The work is to appear in four volumes of about 800 pages each, and is to be sold only by subscription.

The compilers are R. A. Whitthaus, M.D., Professor of Chemistry, Physics, and Hygiene in the University of the City of New York, and Tracy C. Becker, A.B., LL.B., Professor of Criminal Law and Jurisprudence in the University of Buffalo, with the collaboration of August Becker, Esq.; Chas. A. Boston, Esq.; W. N. Bullard, M.D.; J. Clifton Edgar, M.D.; D. S. Lamb, M.D.; W. B. Outten, M.D.; Hon. Wm. A. Poste; Edward S. Wood, M.D.; E. V. Stoddard, M.D.; Hon. Goodwin Brown; J. C. Cameron, M.D.; E. D. Fisher, M.D.; H. P. Loomis, M.D.; Roswell Park, M.D.; Irving C. Rosse, M.D.; F. P. Vandenbergh, M.D.; J. H. Woodward, M.D.; George Woolsey, M.D.

NOTICES.

MEETING OF SOCIETIES.

The Medical Society of the State of Pennsylvania will hold its Forty-fourth Session, May 15, 16, 17, and 18, 1894, at Philadelphia, instead of at Gettysburg. The change of place is due to the fact that the largest hotel in Gettysburg was recently destroyed by fire.

The Forty-fifth Annual Session of the Medical Association of Georgia will meet in Atlanta, Ga., on April 18, 19, and 20. The officers are: President, W. H. Elliott, M.D., of Savannah, Ga.; Vice-Presidents, G. T. Miller, M.D., of Americus, H. McHatton, M.D., of Macon; Treasurer, E. C. Goodrich, M.D., of Augusta; Secretary, Dan H. Howell, M.D., of Atlanta, Ga.

MÜTTER LECTURESHIP OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA.

The next course of ten lectures under the bequest of the late Professor Thomas Dent Mütter, M.D., LL.D., "On some Point or Points connected with Surgical Pathology," will be delivered in the winter of 1896–97 before the College of Physicians of Philadelphia. The compensation is stated to be $600. The appointment is open to the profession at large. Applications, stating subjects of proposed lectures, must be made before July 1, 1894, to William Hunt, M.D., Chairman of Committee on Mütter Museum, S. E. corner 13th and Locust Sts., Philadelphia, Pa.

THE PENNSYLVANIA STATE MEDICAL COUNCIL.

According to the *Philadelphia Ledger*, of April 6, 1894, "The first meeting of the State Medical Council was held at the Department of Public Instruction to-day for the purpose of organization. All the members were present, including Lieutenant-Governor Watres, Attorney-General Hensel, Secretary of Internal Affairs Stewart, Superintendent of Public Instruction Schaeffer, Dr. Davis, of Lancaster, President of the State Board of Health; Dr. H. G. McCormick, President of the Allopathic Examining Board; Dr. H. B. Piper, Tyrone, President of the Eclectic Examining Board, and Dr. A. Korndoerfer, Philadelphia, President of the Homœopathic Examining Board.

"The organization was effected by the election of Dr. Schaeffer as president, and Colonel Stewart as secretary. It was decided that the office of the Council shall be in the Department of Internal Affairs. After some discussion as to the duties of the Council, the four medical members were constituted a committee to formulate rules to govern the Council in the supervision of the examinations of the three Boards of Examiners. This committee will also pass upon the question of standards of examination in other States. The percentage required in some States is not as high as the standard in Pennsylvania, and the purpose of the law is to prevent incompetent physicians coming here. When this committee is ready to report a special meeting of the Council will be called."

In the next number of the INTERNATIONAL MEDICAL MAGAZINE it is hoped that the decision of the Attorney-General will be given as to whether or not the law applies to the students graduating in the spring of the present year.

NOTE TO CONTRIBUTORS.

ACCEPTED manuscripts will be liberally compensated for, immediately upon publication; or reprints, if stated on the manuscript, will be furnished in lieu of such compensation. It is distinctly understood that all articles appearing as original matter are for our exclusive use, and are not to appear in any other publication excepting the transactions of the society before which the paper may have been read. Illustrated articles are especially desired.

All matters of business, as well as subscriptions, should be sent to the INTERNATIONAL MEDICAL MAGAZINE COMPANY, 716 Filbert Street, Philadelphia.

Manuscripts, exchanges, and books for review should be addressed to the Editorial Office, 3455 Woodland Avenue, Philadelphia.



Right hand, before treatment.



Left hand, before treatment.



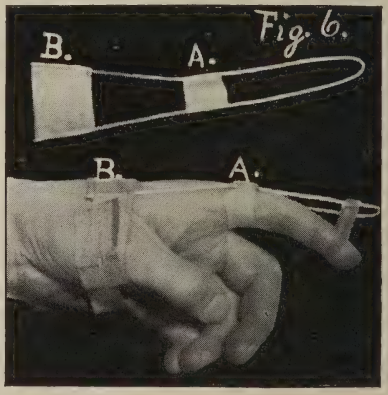
Left little finger, partly relapsed, from not wearing splint.



Right little finger capable of being but partially flexed.



Left little finger, hand completely flexed.



Splint (upper portion of Fig. 6). Splint applied to index finger.

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ORIGINAL COMMUNICATIONS.

REMARKS ON CONGENITAL CONTRACTIONS OF THE FINGERS AND THEIR TREATMENT BY FORCIBLE EXTENSION.

BY E. MUIRHEAD LITTLE, F.R.C.S.,
Surgeon to the National Orthopædic Hospital, London.

ANY deformity of so important and useful a member as the hand of man, however slight it be, is worthy of serious notice, both from an æsthetic and from a utilitarian point of view. The contraction in question not only seriously detracts from the beauty of the hand, but is quite enough to hinder its full use in some of its more specialized functions. In the commonest form of the distortion the last two phalanges of the finger are flexed upon the first at the first interphalangeal joint, the second interphalangeal joint remaining uncontracted. The finger cannot be fully extended either by voluntary effort or by manipulation. The deformity is usually noticed at birth, and does not generally increase to any marked extent during the period of growth. The little finger is most often affected, and hammer-toe is often present in the same subject. An hereditary tendency to both these deformities can often be traced in families.

Of the *causa causans* of this condition I am ignorant. Mr. William Adams considers it to be "more or less of neurotic origin." Dr. Hoffa considers that it is due to a primary anomalous development of the volar integument. Mr. William Anderson,[1] one of the latest writers on this subject, ascribes it to an insufficient growth of the lateral ligaments of the joint as compared to the growth of the bones. Doubtless these ligaments

[1] Lancet, London, July, 1891.

are, as in the case of hammer-toe, the chief obstacle to extension of the joint.

The treatment usually followed is either that by passive movement and gradual extension by means of a splint, or subcutaneous section of the shortened tissues, followed by immediate or gradual extension. Amputation is mentioned by Mr. Anderson as a suitable treatment in some cases.

Mr. Adams[1] limits the subcutaneous section to the fascia, which he recommends should be divided through two or three punctures opposite each joint, to be followed by passive movement and gradual extension. Dr. Hoffa[2] recommends extension by means of a splint. Mr. Anderson advises subcutaneous section of the lateral ligaments here as well as of any other adaptively shortened structure. While cases of slight deformity may be benefited by simple extension or a splint, with or without section of the superficial structures, in severe cases I have not found these measures suffice, and I have been in the habit of dividing the flexor tendons and lateral and anterior ligaments subcutaneously, just as is done in case of hammer-toe. The common occurrence of hammer-toe and contracted finger in the same subject points to a common cause, and, as in both cases the shortness of the lateral ligaments is the principal obstacle to extension, it might be expected that the same treatment would be applicable to both. The widely different functions of the toe and of the finger, however, necessitate a different treatment. The most common result of a successful subcutaneous operation for hammer-toe is an extended but nearly stiff digit or one not capable of voluntary flexion. Such a toe is fitted for all the functions it is generally called on to perform in the foot of boot-wearing man; but in the hand a similar result leaves an awkward and nearly useless member, of which the last state is almost worse than the first as far as usefulness goes. The following case shows the results of two methods of treatment in the same individual, one finger having been straightened by subcutaneous section of the tendons and ligaments, and the other by forcible extension.

B. C., female, aged fourteen years, was brought to the National Orthopædic Hospital in April, 1893, complaining of contraction of both little fingers. She is a healthy and intelligent child, but as she is an inmate of an orphanage, no family history is obtainable. She states that the deformity of the fingers has been about the same as long as she can remember. She believes that she was "born so."

The right little finger is flexed at the first interphalangeal joint rather less acutely than at a right angle. She cannot voluntarily extend it beyond this, but passive motion is possible through a few degrees more. She has full power of flexing the finger into the palm. The last (distal) joint is slightly contracted in flexion, and the last phalanx is adducted towards the middle line of the hand so that it forms an angle with the second of about

[1] Transactions of the Medical Society of London, vol. xiv.
[2] Lehrbuch der Orthopädischer Chirurgie, Stuttgardt, 1891.

one hundred and fifty degrees. The skin over the palmar surface of the contracted joint becomes rather tight on attempting extension, forming a bridge across the angle. No tendon or fascia can be felt to be contracted.

The little finger of the left hand is contracted in a precisely similar manner but to a slightly less degree. Figs. 1 and 2 show the greatest extension producible by voluntary effort. The other fingers on both sides are not so fully extensible as in the average child's hand at this age, but show no marked definite contractions. On examining the feet it was found that the little toes were both contracted at the first interphalangeal joint and the metacarpo-phalangeal joint was hyperextended so that the tips of the toes did not touch the ground. These as yet cause no pain or inconvenience.

On April 12, the flexor tendons of the right little finger were divided subcutaneously, and, as this proceeding did not release the joint, the lateral and anterior ligaments were freely divided. The finger could then be straightened with slight force, and was fixed on a palmar splint, in the corrected position, by strapping and bandage. There was at first considerable swelling of the finger, but otherwise there was no difficulty in the after treatment. The splint was worn for two months.

In June, ether was again administered, and the left little finger was forcibly straightened by manual force, the base of the second finger being firmly grasped by the finger and thumb of the operator in order to diminish the risk of separation of the epiphysis. Several cracks were heard and felt after considerable force had been used. The finger was fixed on a straight palmar splint. Slight pain only was complained of afterwards. The splint was worn day and night for some weeks, and then ordered to be worn at night only, the finger being freely exercised and used in the daytime. When seen in September it could be easily straightened passively and could be fully flexed voluntarily. The power of voluntary extension was very slight.

On January 19, 1894, the finger presented the appearance seen in Fig. 3. This shows the extent to which it could be straightened by gentle pressure, which is a good deal less than in September last. The patient had neglected the use of the splint at night for some weeks, and partial relapse had followed. The right little finger could be fully extended but could not be fully flexed. Fig. 4 shows the awkward position of this finger when the hand was clinched, and Fig. 5 shows the complete flexion power in the left finger.

In this case the operation on the right side seemed to me to have a not quite satisfactory result, as, although the patient could extend all the fingers together so that no deformity was noticed, and thus the appearance of the hand was much improved, its usefulness was diminished by the fact that the finger could not be flexed into the palm, and was much in the way and liable to injury when the hand was closed.

Believing that this result was brought about by the division (unneces-

sary but unavoidable) of nearly all the soft parts between the ligaments of the joint and the skin, I determined to try the effect of forcible extension on the other finger, hoping that it would tear through only the most important obstacles to replacement, leaving tendons, etc., intact.

The tendency of this finger to recontract is disappointing, but I believe that a persevering use of the splint at night will overcome it if continued until the growth of the parts has adapted them to the new circumstances. The relapse is apparently due to the weakness of the extensor minimi digiti from want of use, and to the abnormal length of its tendon attached to the second phalanx, resulting from years of growth in the contracted posture. The strong flexors which were divided and thus lengthened (and apparently rendered useless) in the finger first treated, were left intact in the other, and not being properly balanced, tend to reproduce the deformity, aided by the shape of the joint-surfaces.

This method of rectifying contracted fingers is probably not new, for although I do not know of any previously recorded cases, it is so obvious as to be likely to have suggested itself to others.

A cheap, simple, and useful splint for contracted fingers is shown in the upper part of Fig. 6. It can be made by any one in a few minutes, out of a piece of iron wire (tinned by preference) and a piece of an old tin box or can. The wire should be not less than one-sixteenth inch in diameter. The tools needed are a pair of cutting pliers and a pair of shears or old strong scissors. Soldering is not necessary. The plate A should be placed just behind the contracted joint and B over the dorsum of the hand. The space between the wires should be more than the width of the finger. The splint having been bent to the desired shape, is fixed with adhesive strapping and bandages throughout its whole length, if immediate full extension is wished, or the part of the finger beyond the contracted joint may be left free and gradual extension by means of elastic bands may be used, as shown in the lower part of Fig. 6, in which, however, most of the bandage has been omitted for the sake of clearness. A piece of pasteboard or hat-felt must intervene between the palmar surface of the finger and the elastic band or bands. I have found the latter method useful in a case where complete extension after operation could not be borne. Various modifications of this splint will suggest themselves to practical surgeons.

INTERDEPENDENCE OF OCULAR AFFECTIONS.

BY JAMES A. LYDSTON, M.D., PH.G.,

Lecturer on Diseases of the Eye and the Ear, Chicago College of Physicians and Surgeons.

THE tendency of ophthalmological literature to individualize eye diseases is so great that an attempt to trace a closer relationship subsisting between the various ocular affections seems highly justifiable, and may prove interesting to both the oculist and general practitioner. Glancing at any ophthalmological text-book, we find that each disease discussed therein is treated as a separate and distinct affection, possessing such characteristic manifestations that the student is disposed to believe that a diagnosis is so simple that it can be obtained at a glance; and it is only after a succession of failures that he is led to appreciate the folly of such belief. Were we to consider the intimate association of the several ocular tunics from an anatomical stand-point, we would see at once the fallacy of an attempt to separate distinctly and clearly any type of inflammation implicating these structures. It is only in the types of superficial inflammation of the sclera, cornea, and conjunctiva that we can with any reasonable degree of certainty announce to a patient that no other structures are implicated, and even here we might err, were we to aver positively and unequivocally that the conjunctiva, sclera, or cornea were alone involved, basing our conclusions upon the character of the injection present. And yet we find that the nature of an inflammatory process affecting external structures is very frequently founded upon the forms of injection present,—*e.g.*, we find ciliary injection distinguished from conjunctival injection by certain distinctive phenomena, such as color, depth, displacement of blood-vessels, etc., but these are by no means reliable as a means of differential diagnosis in all cases. In order to emphasize more clearly the intimate association of the types of ocular inflammation, we will direct our attention to the more frequent diseases attacking the extra-ocular tunics, the conjunctiva, cornea, and sclera. The varied forms of conjunctivitis are in many instances complicated with irritation of the deeper structures, and to a still greater extent is this true with respect to the cornea, as we often meet with an inflammation of this structure which at first glance appears to be essentially simple, and yet upon more careful investigation of the deeper structures we detect iritic and ciliary complications.

This obtains particularly with respect to keratitis parenchymatosa, in which we often see a deeper anterior chamber, iritic irritation, choroiditis, anterior and posterior, increased or diminished intraocular tension, so that we are not in a position in any given case of keratitis parenchymatosa to isolate the phenomena of this affection and ignore other concomitant mani-

festations, which necessitate a guarded prognosis as to the ultimate outcome of the affection. Again, in case of scleritis, inflammation of the sclera, which is one of the rarest of ocular affections, we are led to conclude finally, if indeed we are not forced to observe at the outset, that the contiguous structures are involved, and the remnants of the disease are always corroborative of such conclusion. Again, one of the most frequent accompaniments of inflammatory changes about the ocular structures is the so-called inflammatory œdema occurring in almost multitudinous affections, such as lid inflammations, erysipelas, hordeoli, periostitis, inflammation of the lachrymal sac (dacrocystitis), acute blennorrhœa, purulent keratitis, iridocyclitis, purulent choroiditis, panophthalmitis, etc., and yet we would be far from justified in concluding from its mere presence that its source lay in any one of the structures implicated to the exclusion of neighboring structures (except in case of hordeoli, chalaza, etc.), and we are able in case of tumors of different types to pronounce with a remarkable degree of assurance that this or that structure is implicated or diseased. Again, corneal ulceration and corneal abscess are two distinct varieties of corneal suppuration caused by infection, and yet we find corneal ulcers closely related to corneal abscesses,—*e.g.*, traumatic ulcers which usually are of a benign or malignant type, occurring in elderly people, and when they assume their most malignant form have the yellowish color of pus, with a noticeable, opaque, yellowish, swollen margin, and in these cases we find iritis with hypopyon a frequent concomitant. The essential difference between corneal ulcers and corneal abscesses lies in the fact that ulcers are superficial, while abscesses lie in the depth of the tissues, so that in reality there is but a slight difference between them. With respect to the intraocular structures, let us see what an intimate association exists between affections found in this situation, which are usually described as separate and distinct diseases. Beginning at the vitreous, we find that a pure and simple uncomplicated case of hyalitis, inflammation of the hyaloid body or vitreous humor, is one of the rarest of ocular affections, only occurring in cases in which the vitreous contains a small foreign body which acts as a nucleus of inflammatory reaction; while, *per contra*, we very frequently find the vitreous humor implicated as a result of continuity of an inflammatory process involving contiguous structures; such, for example, as choroiditis suppurativa and non-suppurativa. In retinitis, inflammation of the retina, we find in certain cases that the inflammatory process extends to the optic papilla and *vice versa*. The retina, too, by reason of its situation, is prone to become affected by reason of extension of an inflammatory process primarily implicating the choroid. That all-important structure, the lens, is one that is not prone to an isolated inflammation of its structure. A phakitis, so styled, pure and simple, without previous involvement of neighboring structures, is one of the rarest of eye diseases, and yet it is especially liable to pathological changes by means of extension of inflammatory changes from neighboring structures. The iris, by reason of its functions

and its situation, is particularly susceptible to inflammatory reaction, and is seldom, if ever, implicated by a cyclitis which, however mild, is usually present in all iritic inflammations of severe type. This follows as a consequence of the intimate anatomical relationship of the iris and ciliary body. The optic nerves are also susceptible to the influence of inflammation extending from the anterior ocular structures, and *vice versa*, as is illustrated typically by neuritis ascendens and descendens, which Von Graefe first named and assigned to each its characteristic train of symptomatic phenomena; but, unfortunately, we are not always able to define positively the presence of one to the exclusion of the other; in other words, clinically, the one merges into the other, and when we consider that the optic papilla is nothing more than the intraocular termination of the optic nerve proper, we appreciate fully the tendency of upward extension of an inflammatory process which apparently primarily involves the papilla alone; and, *per contra*, with a morbid process involving the nerve-sheaths of their fibrillæ above the papilla, we readily comprehend the cause of its progression downward. Of course, it must be conceded that there are certain types of inflammation of the optic nerve in which it is possible to make a diagnosis ophthalmoscopically. Thus, in the choked disk of engorgement neuritis, when the swelling of the optic papilla is pronounced and abruptly ceases at the edge of the disk, while an intense engorgement of retinal veins coexists, a diagnosis is not difficult, but there are many transitional forms that render the diagnosis uncertain. Engorgement neuritis by the choked disk, as it is called, is such a frequent concomitant of cerebral tumors, occurring as it does in at least ten per cent. of all cases, that it would hardly be just to pass it without comment. The cerebral diseases which are complicated with optic neuritis are either focal or diffuse. The focal alterations are usually tumor formations, and give rise by reason of pressure to the choked disk, which is often the only indication of a brain tumor, and occasionally exists for a protracted period without exciting other positive symptoms, which serves to illustrate the importance of ophthalmoscopic examination in all such cases. Rarely, other focal lesions may give rise to optic neuritis, such as thrombosis of the sinuses, abscesses, apoplexy, aneurisms, cysticerci, and echinococcus cysts, etc.; while the diffuse affections are hydrocephalus, acute and chronic meningitis, disseminated sclerosis. Acute meningitis, hydrocephalus, and tubercles of the brain are most frequently the etiological factors in the neuritis of childhood, and these cases do not always fall under the oculist's inspection timely enough to enable him to avert the destructive atrophy which supervenes, notwithstanding his ready ability to recognize the affection.

The foregoing comments would hardly be complete without some reference to suppurative processes implicating the ocular structures generally. In accordance with the conclusions of bacteriological research, suppurative processes are ascribable to schizomycetes, and particularly to the staphylococci, first noted by Ogston and more fully described by Rosenbach. In

purulent corneal inflammation fungi have been microscopically defined, either the ordinary pus fungi or fungi of a higher order, such as the aspergillus glaucus and leptothrix buccalis. A marked purulency follows corneal inoculation with such fungi which eventuates in purulent iritis and panophthalmitis, which has been attributed to extension of the fungi to the deeper parts. Accepting, as we must, that the presence of micro-organisms is one, if not the chief exciting cause of suppurative inflammation, yet it by no means satisfies the indications in all cases,—*e.g.*, cases in which particles of red-hot metal have been driven into the eye, and then subsequently light up a purulent and destructive inflammation, possibly eventuating in sympathetic inflammation of the opposite eye; and the explanation here given is that the oxidation of the metal causes a chemical reaction sufficient to light up the fatal process; ay, but are the ordinary pus fungi and even the higher fungi not likewise here demonstrable? To be sure. Then we must infer that either these fungi have been introduced from without, or that they have spontaneously developed within, as a result of fermentative changes analogous to the development of the ordinary schizomycetes, or yeast plant, a process which is familiar to all, so that I am of the opinion that there is in all cases of suppuration a chemical element that is not sufficiently appreciated. This is strongly supported by our antiseptic surgery of to-day. Formerly it was considered requisite in all cases of operations about the abdomen to resort to constant disinfection by the method of Lister; to-day we find our abdominal surgeons applying nothing but sterilized water, with far better results than ever before achieved with all their antiseptic precautions. And what is the rationale of the action of sterilized water under such circumstances? Simply the removal of all organic *débris*, such as blood, disorganized tissue-elements, etc., which would otherwise undergo disintegration, softening, and putrefaction, favoring infective suppuration, and at the same time eliminating the irritative effects of the chemical constituents of the various disinfectants.

Relative to the question of transmission of the specific poison of sympathetic ophthalmia, we must ascribe due weight to the conclusions reached by Deutschmann, who found that if certain fungi, staphylococci, or micro-organisms were introduced into the eye, they would travel backward along the optic nerve-sheaths to the base of the brain, and thence crossing to the opposite nerve reach the opposite eye, thus lighting up sympathetic ophthalmitis, or at least an inflammation of the intraocular end of the optic nerve. Regarding the eyeball as simply an expanded bulbous extremity of a nerve with altered characters to meet the functions of its physiological necessity, in order to explain sympathetic ophthalmitis on another basis, it only remains requisite to add the elements of irritation, which in such cases are usually complicated with infection.

HYPNOTISM.

BY W. HENRY PRICE, B.A., M.D.,

Assistant Physician to the Children's Dispensary of the University Hospital, and Physician to the Out-Patient Department of St. Clement's Hospital, Philadelphia.

For the past century and a half various observers, some of them scientific men, some charlatans, have noted that certain susceptible individuals were capable of being thrown into a peculiar nervous condition in which the body and mind of the subject were supposed to be influenced by a mysterious force emanating from a second person. The phenomena thus observed have been classified under the various names of animal magnetism, odyllic force, electrobiology, mesmerism, clairvoyance, and hypnotism. With the exception of mesmerism, each of these terms implies a theory. Thus, animal magnetism implies a magnetic force peculiar to animals and analogous to the influence of magnets upon certain metals. Electrobiology, a more modern name given in 1850 by two American investigators, refers the phenomena to electrical currents originated in the body and capable of influencing electrically the bodies of others. Mesmerism was so called in honor of Friedrich Anton Mesmer, who was born at Weil, in 1733. He studied medicine at Vienna under Van Swieten and De Haen, and took his degree. He was one of the earliest experimenters with this peculiar force, and obtained his results at first by stroking the body with magnets; but in 1776, ten years after the publication of his work upon the subject, he met, in Switzerland, John Joseph Gassner, a Roman Catholic priest, who practised this supposed supernatural power by stroking with the hand alone, and soon Mesmer found he could obtain equally good results without his magnets. Finally, he became convinced that the phenomena obtained resulted through some peculiar influence upon the nervous system.

In 1778 he removed to Paris, and the whole city was thrown into a state of excitement by the marvellous effects which he produced. This notoriety brought upon him the indignation of the medical faculty of Paris, and he was soon classified as a charlatan. Notwithstanding this censure the government offered him twenty thousand francs to disclose his secret, but he refused. At the same time, however, he gave private lessons to any one for one hundred louis, which practically represented his knowledge upon the subject.

Hypnotism, from (Greek) ὕπνος, "sleep," is applied to a condition in which the individual is apparently asleep but still responds to the will of the operator as regards both motion and sensation. This latter term, which is the one in common use to-day, dates back to the researches in 1841 of James Braid, a surgeon of Manchester, who was the first to investigate the subject from a truly scientific stand-point and to give a physiological

explanation. He, according to his own acknowledgment, was a complete sceptic, but became convinced that he could produce "a peculiar condition of the nervous system induced by a fixed and abstracted attention of the mental and visual eye on one object not of an exciting nature."

To this condition he gave the name of *neuro-hypnotism*, but for the sake of brevity *neuro* was suppressed, and the term hypnotism came into general use. On June 29, 1842, Braid read a paper before the British Association in Manchester called "Practical Essay on the Curative Agency of Neuro-Hypnotism," and this was followed, in 1843, by the publication of his work entitled "Neurypnology; or, The Rationale of Nervous Sleep considered in relation with Animal Magnetism," illustrated by numerous cases of its successful application in the relief and cure of disease.

In the minds of those who have more fully investigated the subject, there can be very little doubt that this condition may be induced in certain susceptible individuals; but the doubtful points are, *what percentage of patients prove susceptible?* secondly, *in what does this susceptibility consist?* and, thirdly, *what is the value of hypnotism as a therapeutic agent?* The answer to the first question varies considerably according to the statements of different observers, but taking everything into consideration, it is perhaps nearest to the truth to say that one woman out of three, and one man out of five, prove susceptible to this peculiar force. The second question, as to the cause of the hypnotic state, is one that has never been satisfactorily answered, and indeed proves a most difficult problem to solve. It is almost certainly dependent upon the infinite influence of the mind over the body; but as the limitations of this influence have not as yet been thoroughly established, it is not difficult to see why this question is a hard one to answer.

The will of the operator first influences by making a decided impression upon the mind of the subject, which, in turn, inhibits or accelerates the voluntary functions of the physical being. Dr. Rudolph Heidenhain, of Breslau, attempts to explain the phenomena by a doctrine of inhibiting nervous actions, which would, no doubt, account for most of the results obtained in experiments upon both motor and sensory functions; while Dr. William B. Carpenter was the first to recognize the value of Braid's researches as bearing upon the theory of "reflex action of the ganglia at the base of the brain and of the cerebrum itself."

The usual method of inducing the hypnotic state is to have the subject stare at a glittering object, held about fifteen inches from the eyes, high enough above them to cause a strain on the eyes and eyelids. At first the pupils contract from the accommodation to near vision, but this is soon followed by a dilatation, at which juncture the operator makes a few passes over the face, and if the eyelids do not close spontaneously, he closes them gently with the tips of his fingers, and strokes the cheeks at the same time. Another method, and one largely used at the present day, in hospital practice especially, is by means of a French instrument, which consists of two

horizontal pieces of wood about eight inches long with six small circular mirrors about one inch in diameter on each side. By means of clock-work these are made to revolve in opposite directions, and after being wound up the instrument is placed on a table on a level with the eye, a short distance in front of the patient, who is seated at the table on a chair. The strain caused by the glittering of these mirrors as they revolve usually produces a drowsiness in the individual in three to five minutes, and the subject, sometimes spontaneously, sometimes at the suggestion of the operator, followed by a pass of his hand across the eyes, falls asleep. Or, on the other hand, if somnolence is not desired by the operator after the passive state has been induced, any action that he may request will usually be complied with. A third way, and that usually resorted to by those who are most expert in hypnotism, requires neither fixed glittering objects nor revolving mirrors, but is produced by having the subject first remain passively silent with eyes closed for about five minutes, and this must be accompanied by a willingness to be mesmerized, and then the operator, saying "Open your eyes and look right at me," stares fixedly into the pupils of his patient, at the same time stroking the forehead with his thumbs and the cheeks with his finger-tips. He first notices the pupils contract, and a moment later, if the patient is going to prove a susceptible subject, he observes a dilatation of the pupils accompanied by a characteristic vacant stare, and the individual is now in a condition to follow any suggestion the operator may indicate.

The influence most easily exerted is to inhibit voluntary muscular action, or, on the contrary, to render the subject incapable of stopping a motion already initiated. Thus, on pressing the palms of his hands firmly together, at the operator's suggestion, he may be totally unable to separate them again, or after having closed the eyelids, he may be unable to open them. As a counter-experiment I have had the patient imitate my own motion of rapidly revolving the hands one over the other, going faster and faster until after ten seconds he was utterly unable to stop until the word was given. So, too, it is quite an easy matter to render the subject totally unable to speak his own name, which illustrates the power of inhibiting the memory for the time being. The most difficult results to obtain are the perversions of the special senses, and those who are sensitive subjects, so far as motor phenomena are concerned, may not respond in the slightest degree to suggestions which affect the sensory side of the brain.

After frequent repetition, however, which always increases susceptibility, a motor subject may also become perfectly responsive to sensory suggestions. Thus, in one case a table was placed before a male subject, and upon being told it was a cow, he examined the animal critically and viewed it with admiration, at the same time keeping at a respectful distance from what he supposed to be her hind legs. This scene was made very ludicrous when a second person, a woman, was hypnotized, and was told that this same table was a piano. She immediately drew up a chair, sat down, and began playing upon what the other subject thought was the back of the cow. He

looked at her in amazement, and asked her if she wasn't foolish to do such a risky thing. These influences on the special senses may be duplicated in a thousand ways, and are equally applicable to smell, taste, and hearing.

To the third question we may answer that the therapeutic value of hypnotism has not yet been fully established as to its limitations. That it is of service in many cases cannot be denied. I have seen a tooth extracted under its influence without evidence of the slightest pain, an hysterical convulsion stopped, and violent neuralgias relieved. One nervous woman who proved susceptible to this influence, and who subjected herself to daily treatment for several weeks, was entirely relieved of a severe grade of insomnia, and now enjoys an uninterrupted night's rest, with the consequent improvement of all her nervous symptoms; but, on the other hand, I have seen a case of insanity apparently made distinctly worse: so that not only the nature of the disease has to be taken into consideration, but the idiosyncrasy of the patient and the personal equation of the operator may modify the therapeutic effect for good or evil.

This unique force presents a wide field for further research, and is a most interesting study to the physician and the scientist. Until recently, our attainment of a fuller knowledge has been much hampered by a haze of superstition and fictitiousness which has surrounded it, owing to our inability to base it upon anything unless a supernatural force; but now that the phenomena are being more clearly explained upon a physiological basis, we may hope for a greater progress in the future.

Supplementing the foregoing remarks, I may cite the following case, which will serve to show what varied results can be obtained with hypnosis in a sensitive subject:

Florence J., aged twelve years, was born in London, but has lived in Philadelphia since she was three years old. Has suffered for several years with headaches supposed to have been due to eye-strain, but were not relieved by wearing glasses.

Finding she was susceptible to hypnotic suggestion, I endeavored to ascertain to what limit the suggestion could be carried successfully. After five minutes of perfect silence in a quiet room I stroked the forehead gently, at the same time asking her to look straight into my eyes, and then closing her eyes gently I told her she could not open them. She tried hard to do so, but could not until I broke the impression, which can be done either by reversing the direction of the stroking, or by snapping the fingers sharply immediately in front of the patient's face, or by simply saying in a decisive tone of voice, "*Open your eyes.*" I next had her press the palms of her two hands firmly together, and after my stroking them a couple of times she was totally unable to separate them. Upon rapidly revolving the hands one over the other in imitation of my own motion, she could not inhibit it until I told her to "*Stop.*"

I next produced a local catalepsy in her right arm, and try as she would the elbow-joint would not bend, and this was followed by producing a general cataleptic state of the entire external muscular system, and she stood as rigid as a manikin. She was made to forget her name completely, and while her memory was a blank, upon suggesting that her name was "*Johnnie*" she at once acquiesced, remarking, "It was funny I couldn't remember that." Then a handkerchief was placed on the floor, and she was told that she could not jump over it. She tried ever so hard, but,

notwithstanding the fact that I had placed a silver coin on the other side of the handkerchief and told her she could have it if she could get to it, she was totally unable to move either foot, as much so as if they had been glued fast to the floor. Her special senses were easily controlled, and hallucinations of sight, hearing, and taste were successfully obtained. Thus, after asking if she was fond of sugar, to which she replied affirmatively, I placed a pinch of table salt upon her tongue, telling her it was sugar, and she enjoyed it as sugar, and asked for more. The sight was controlled in the following way: she was taken to the mantel-piece, and pointing to a vase I told her it was a parrot in a cage. She talked to it, fed it upon an imaginary cracker, and asked various questions about it. She heard an imaginary bird singing, and upon asking her what sort of a bird it sounded like she replied, "A canary-bird," and looked all about the room for it.

I gave her a frightful toothache and cured it as rapidly, and could initiate pain in any part of her body. As to the therapeutic value of hypnosis in this case, I may say that her headaches can easily be dispelled when present, but as yet I have been unable to prevent their return, which is what I hope to accomplish eventually. [1]

THE DIETETIC TREATMENT OF CHLOROSIS BASED ON TISSUE METABOLISM.[2]

BY PROFESSOR CARL VON NOORDEN, M.D.,

Berlin, Germany.

I DO not intend to lay before you exhaustive menus for chlorotic patients. This would be, indeed, impossible, because the dietetic orders for chlorotic patients are not to be identical in every case; on the contrary, the regimen which might be extremely useful for one chlorotic patient might be very harmful for another. I shall only formulate certain axioms, and give the reasons for them.

Every physician knows that the majority of chlorotic patients maintain a satisfactory state of nutrition; indeed, they are inclined to accumulate fat. Every text-book alludes to this fact, the cause assigned for this phenomenon being, that because of the anæmia the combustion processes are retarded, and thus there is a saving of body material, and especially of fat. This view, though widely held, is absolutely wrong. The results of the very careful researches by Fr. Kraus,[3] of Vienna, and by Bohland,[4] of Bonn,

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[1] This case was subsequently shown in clinic at the University Hospital by Professor Horatio C. Wood, at which time all the phenomena described were repeated.

[2] One of the lectures delivered before a private class at Berlin. Translated by Dr. Carl Frese, of the German Hospital, Philadelphia. The first paper, by the same author, entitled "Tissue Metabolism in Chlorosis," appeared in the April number of the INTERNATIONAL MEDICAL MAGAZINE.

[3] Ueber den Einfluss von Krankheiten, insbesondere von anämisches Zuständen auf der Gaswechsel. Zeitschrift für klinische Medicin, 1893, xxii. 449.

[4] Ueber den Respiration. Gaswechsel bei verschiedenen Formen des Anämie. Berliner klinische Wochenschrift, No. 18, 1893.

show that the combustion processes in chlorotic individuals take place with the same energy as in the healthy. It is impossible here to detail the technique of the experiments referred to. I shall only mention that they are founded on measurements of the oxygen used up and the carbon dioxide given off, and that all expert investigators acknowledge their convincing force.

If, therefore, neither the diminution of the percentage of hæmoglobin in the blood, nor a diminution of the energy of decomposition of the cells in chlorosis, exerts an influence on the creation of energy and of tissue, we must ask what, then, does favor the tendency in these patients to the accumulation of fat?

In the first place, I would lay stress on the fact that not all chlorotic patients possess this tendency. There are chlorotics who are lean, who remain lean, or who get lean. If it be permissible to make use of a general impression for drawing a conclusion, I should say that the inclination to adiposity is met much more frequently in the chlorotic girls of our well-to-do classes than in those seeking relief in hospitals and out-patient departments. Further on we shall learn the causes for this. For the accumulation of fat more material must be taken in than is necessary for the economy; in other words, the import of potential energy must be larger than the export of living force (in work and heat). This is an absolute law. On which side of the balancing-point do we find the cause for the disturbance of the equilibrium in chlorosis? Doubtless in most cases on both sides.

Most individuals suffering from chlorosis, especially those of the comfortable classes, lead an existence which is lacking in muscular activity. They sleep long, rest frequently during the day, and because they easily feel tired,—not because they suffer much from shortness of breath,—restrain the activity of their muscles so much that on the average they do less actual work than their companions of the same age under equal external circumstances. To this probably must be added a lessened elimination of heat by the skin; for the skin of chlorotic patients is in a marked measure poor in blood, and the cutaneous vessels are of small calibre. These patients, therefore, easily feel chilly; and if to this be added a cramp of these small cutaneous vessels, the sensation is increased to one of icy frigidity. I would remind you that chlorotic patients frequently complain of coldness of the hands and feet. The condition of the circulation in chlorotics varies, as is well known, frequently and rapidly, so that one scarcely dare come to the conclusion that the conditions mentioned are of importance as to their bearing on the total loss of heat, and in consequence, on the total production of heat. On the other hand, an indirect influence is possible and probable. The chlorotic girl, easily feeling chilly, as a rule clothes herself more warmly than her companions, and anxiously avoids getting cool. By this she diminishes by her own will the loss of heat, and in consequence the body cells serving the cutaneous surface work more sparingly.

In order not to be misunderstood, I will again point out that, under

completely similar external conditions, there exists absolutely no difference in the tissue morphosis of a chlorotic and a healthy girl, an equal amount of oxygen being used up (*cf.* above); but the chlorotic girl makes for herself, consciously and unconsciously, other external conditions, and thereby depresses the heat production and the total of vital force developed by her below the average normal standard. On the other side we have to consider what is taken in. Generally one hears and reads that chlorotic patients complain of bad appetite. I would restrict this to the statement that they suffer at times from poor appetite, especially at certain hours of the day. I must distinctly deny that they take less food on an average than their healthy companions under equal conditions of life. Of course I do not make this assertion from a superficial consideration of this point. I have always most severely insisted that superficial estimates in questions of nutrition lead to the gravest errors. My investigations, in fact, are based on a very exact method. I considered it necessary to find out how much patients who were suffering from anomalies of nutrition would eat if left to their own discretion. I therefore ordered my patients to note down for from two to four days—using the scales and the measuring-glass for this purpose—how much they ate and drank voluntarily. Then I calculated the amount of albumin, fat, and carbo-hydrates in the food. For this I used either the well-known tables of J. König and others, or, for patients treated in the Charité, I used my own very numerous analyses of the diet supplied by the kitchen of that institution. After the quantity of albumins, fats, and carbo-hydrates taken in had been ascertained, I calculated the amount per cent. of potential energy, or its caloric value, of the food taken.

According to experience, food which results in thirty-four to thirty-eight calories is sufficient to cover all the losses of a chlorotic person, but when unusual muscular exertion is indulged in more will be needed.

In most patients I found numbers which are altogether normal,—*i.e.*, thirty-two to forty calories per kilo of body weight; in many patients I found higher figures; in one-quarter of them, smaller numbers. As might be expected, the lower figures originated from lean chlorotic girls. On closer inquiry it was generally found that these patients complained of gastric pains after eating, and therefore were careful not to eat much. It is probable that some of them suffered from gastric ulcer besides the chlorosis. The highest figures I obtained in girls from well-to-do families, in which attention was paid that the patient took daily large quantities of milk of the very best quality. This is a sign of the times. Milk-cures are considered a cure-all; and it is astonishing to see the enormous quantities of milk that are consumed.

If we remember that one litre of good creamy milk has a nutritive value of six hundred and forty calories; if we further remember that some chlorotic girls without special medical advice drink two such litres per day, we will see that such girls get twelve hundred and eighty calories daily. A girl weighing about fifty-five kilos, however, does not need at the utmost

more than two thousand one hundred calories. Very little food, therefore, is necessary, in addition to the two litres, to cover the remaining eight hundred calories,—indeed even to surpass them. Further, I found very high values for the amount of food consumed daily by girls from the working classes who came to the hospital with very severe chlorosis. As soon as they had become accustomed to the new diet they developed an extraordinary appetite, so that the normal value of thirty-eight calories per kilo of body weight was far exceeded, and the patients showed an enormous increase in weight due to the accumulation of fat.

Basing on these conditions and observations, I will formulate this statement: That patients suffering from chlorosis are inclined to amass fat, for the reasons that on the one hand they are inclined to diminish the expenditure for work and heat, and on the other hand they do not diminish the supply of food correspondingly, but rather in many cases surpass the average measure. Thus is simply explained this well-known phenomenon, such explanation divesting it of any mystic significance.

The deductions relative to dietetic treatment follow naturally; they may be stated in a few words. We must endeavor to prescribe for young chlorotic girls originally lean, or who have become so in the course of their sickness, a food copious in quantity and favoring the deposit of adipose tissue. As the cause of the anomalous state of the nutrition is generally to be found in disturbances of the stomach,—frequently even being due to ulcerative processes in that organ,—we must choose such foods as we know are useful in such gastric affections. I have elsewhere discussed the principles guiding us under these conditions.[1]

Special care should be taken in these cases to allow large quantities of such fats (butter) and amylaceous foods as do not irritate the stomach. With regard to albuminous bodies we should give exact directions as to their quality, but we must not exceed the quantity usually taken by girls of that age (about eighty grammes per day). In order to diminish the losses and to favor the increase of the body weight we should deliberately advise the patients to avoid unnecessary muscular exertions and loss of heat. Under certain circumstances we may even order absolute rest in bed for some time, thereby acting on the principle that Weir Mitchell has advised for other conditions.

Matters are totally different in chlorotic girls who commence this disease being quite fat, and in whom more fat is constantly deposited. We must not have the idea of favoring this adiposity. These girls should be allowed as much albumen as they want to eat, but at least one hundred and twenty grammes per day. Besides, we must allow them so much fat and carbo-hydrates that the total nutritive value of the food does not exceed

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[1] Lehrbuch der Pathologie des Stoffwechsels. Berlin, 1893; Ueber den Stoffwechsel der Magenkranken und seine Auspruche an die Therapie. Berlin, 1893; Grundriss eines Methoden der Stoffwechselsversuche. Berlin, 1892.

thirty-six calories per kilo of body weight. For a well-nourished, moderately fat chlorotic girl weighing sixty kilos I would consider the following diet as eminently suitable:

120	grammes	albumin	= 492	calories.
60	"	fat	= 558	"
270	"	carbo-hydrates	= 1110	"
	Total,		2160	"

(*i.e.*, 36 calories per kilo of body weight).

This diet will keep a chlorotic girl in equilibrium, providing she does not exert her muscles violently and leads an ordinary, average life. The patient ought to take moderate exercise in the fresh air; living out of doors should be practised as much as possible, because such mode of life without doubt stimulates the new formation of blood. Concerning out-door exercise, I hold the opinion that no more should be attempted than is easily possible without exertion, so that the patients are tired but not fatigued when they return from their walks. Unfortunately, a different practice is frequently observed, and this does greater harm than good. But if the muscular work is gently and gradually increased, with constant reference to the results desired, the final effect will be very gratifying. As the amount of work is augmented, the quantity of food, however, need not be increased above the standard laid down above. This will result, as the work becomes harder, in the patients having to part with some of the fat stored up in their bodies, an effect which under these circumstances is very desirable.

To these governing principles I have to add two points,—first, concerning the consumption of alcohol; secondly, at what period of the day the food should be taken. The lay public very generally believes nowadays, and even some physicians favor the view, that the drinking of wine will improve the formation of blood. Especially, red wine is supposed to possess this power (and the public, in the shallowest and most ridiculous manner, imagines relationship to exist between the redness of the blood and the red coloration of the wine). I have frequently heard this from my patients in the Charité. I believe that in Germany, at least, alcohol is employed too liberally in the treatment of chlorosis, and particularly in convalescence it is administered to cases that do not need it. This statement does not refer to the poorer classes, but is especially applicable to patients in better circumstances. When the chlorotic patients once commence to drink wine, and feel that immediately after it they are fresher and more able to stand exertion, they frequently resort to this stimulant, especially in the morning hours, and thus they absorb considerable quantities of alcohol. This certainly is harmful, not so much in view of the cure of the chlorosis, but in respect to the moral training of the patients. I have no objections to chlorotic patients taking small quantities of wine, especially as this sometimes induces them to take more solid food; but the amount permissible ought to

be exactly regulated by the physician, and not left to the patient's own discretion. The physician, too, has to be guided by clear principles. Relationship between alcohol ingestion and the formation of blood is most improbable. One fact, however, we are sure about, and it is that alcohol favors the accumulation of fat: the mathematical proportions are that it is equivalent for a person to eat seven grammes of fat or drink nine and three-tenths grammes of alcohol. Alcohol, therefore, is a powerful fat-former. Therefore we may grant some wine to lean, chlorotic patients, and should be very careful as to its use in those inclined to be stout.

Concerning the question how the amount of food to be taken during the day is to be distributed over the various meals, the fashion prevalent in Germany is very badly adapted to the needs of persons suffering from chlorosis. Generally it is customary to take early in the morning a very slender meal, at night somewhat more, but the principal meal is the dinner, between twelve (noon) and one o'clock. Most chlorotic girls feel weakest and worn out during the hours of the forenoon. During these hours they lounge about and are incapable of any proper kind of work. This condition, which is very uncomfortable on the one hand, and from the educational point of view is, on the other, directly harmful, may best be mended if the English fashion is adopted, which consists in commencing the day with a good, hearty meal. I can scarcely praise this custom sufficiently. I recommend chlorotic girls to drink slowly half a litre of milk of the best quality while they are yet in bed in the morning. They must take time, and occupy at least a quarter of an hour in consuming this quantity. They ought to rise half an hour later, and they should be rubbed briefly with a dry rough woollen towel. This is to be followed by the breakfast, consisting of a small cup of tea, one or two slices of buttered toast, and plenty of meat. I consider it extremely desirable—the physiological reasons for this are easy to defend—that these patients should take in at breakfast, before the daily work commences, as much albumin as possible. Two and a half hours later some bread and butter and two eggs are to be eaten, followed immediately afterwards by drinking a quarter of a litre of milk. If considered advisable for special reasons, a small glass of sherry is now permissible. If the food-supply is thus regulated we find that chlorotic girls easily pass those hours of the day which we know by experience are the most disagreeable for them. I do not give any specific directions for the remaining meals of the day, as it is less important to follow fixed rules with regard to them.

CLITORIDECTOMY FOR THE CURE OF CERTAIN CASES OF MASTURBATION IN YOUNG GIRLS.[1]

BY ALVIN EYER, M.D.,

Consulting Surgeon, St. John's Hospital, Cleveland, Ohio.

MR. BAKER BROWN, one of the most distinguished English surgeons of his day, after seven years of enthusiastic study in the line of various functional and organic disturbances dependent upon masturbation, published his little book, "On Certain Forms of Insanity, Epilepsy, etc." This volume was the outcome of the study and treatment of forty-nine cases,—namely, hysteria, 14; catalepsy, 5; epilepsy, 8; spinal-irritation, 7; hysteroid epilepsy, 7; idiocy and insanity, 8.

He had advocated, for many years, the removal of the clitoris in all such cases as could be traced to "peripheral irritation of the pudic nerve;" and it was this operation that he resorted to for a cure in the forty-nine cases just referred to. It may be known to many of you that it was through lack of appreciation and acceptance of this work that this good surgeon died broken-hearted.

That he erred cannot be disputed, for history shows that the epilepsy, catalepsy, hysteria, insanity, and idiocy soon recurred after operation in many of the cases reported by him. It is now thirty years since this most extraordinary and radical effort was proposed, and it is my purpose in this short paper to enter into an analysis of his endeavor; make plain, if possible, his mistaken conclusions, credit to his memory all that such an after-study can avail him, and, withal, hope to recall from his abandoned cause a single useful procedure.

Here, as in all important strides in surgery, it may be observed that we are inclined to extremes,—first to the one, then to the other. Baker Brown in his enthusiasm went to the utmost limit in his practice, while his confrères, I think, went to the other in utterly condemning so palpable a measure. This, I say, is unfortunately true of nearly all important surgical departures. It was true of ovariotomy and oöphorectomy; and it is to-day true of lavage in the various stomachic ailments and of abdominal section for the many diseases of the appendix vermiformis. In reviewing the little volume, one observes that Baker Brown's cases ranged, in age, from early childhood to advanced womanhood; and I believe it was this indiscriminate selection of cases that led to his failure to permanently place this, his favored operation, before the world. Upon further reading, it strikes one

[1] Read before the Cleveland Medical Society December 21, 1893.

also as most remarkable that his physiological knowledge permitted him to be so sweeping in the application of this operation, for on page 7 he writes: "Long and frequent observation convinced me that a large number of affections peculiar to females depended on loss of nerve-power, and that this was produced by peripheral irritation, arising originally in some branch of the pudic nerve supplying the clitoris, *vagina*, *perineum*, and *anus*."

Accepting this assertion as a physiological truth, it becomes hard to understand why he did not carefully select his cases for operation, and exclude all those in which the peripheral irritation could be traced to any branch of the pudic nerve other than the one supplying the clitoris. Had he made this his rule, I am convinced, he would have succeeded in his effort. And it will be solely upon this differentiation that I shall depend in advocating the operative measure proposed by me for the cure of certain cases of masturbation in young girls.

The distribution of the various branches of the pudic nerve is well known to anatomists, and physiologists are unanimous in the belief that orgasm in the female depends upon peripheral irritation or titillation of *one* or *all* of these branches.

Baker Brown distinctly recognized this, as did also his friend Handfield Jones. Before them we have Kobelt and Acton, and since Landois and others. Gynæcologists have daily proof that orgasm in the female does not necessarily depend upon titillation of the pudic branch supplying the clitoris. Dr. Paul F. Mundé in a recent paper (*International Journal of Surgery*, March, 1893) incidentally remarks, "that while titillating the cervix with a sound the woman very plainly manifested voluptuous sensations." Recognition of the fact, then, that the clitoris, in the human female, is not essentially the seat of passion makes it plain why Baker Brown's broad employment of clitoridectomy proved so disastrously futile.

What I propose bringing to your attention to-day, then, is a modified Baker Brown theory, and urge upon you his identical operation, *limiting myself, however, to a class of cases coming plainly within operative range.* This I can best do, perhaps, by citing a case.

In September, 1891, there was brought to me, by a highly intelligent couple, a girl with the following history:

M. E. H., age seven years, German-American; marked blonde with large blue eyes, and of unusual strength and physical development. From the parents I ascertained that she was their child by adoption; that, one year before, they had taken her from an orphan's home, where they had made her many previous visits and carefully inquired into her parentage, health, and habits.

They stated that the girl was, at that time, less pale, more cheerful and self-possessed than now; that she had lost much of her former rotundity and was becoming extremely nervous and irritable, without appetite and disinclined to her past pranks and childishness. The mother assured me she had caught the child in the act of gratifying her passions as often as four or five times a day, and that she had confessed having practised the same, daily, long before leaving the asylum.

In a personal conversation I found her much abashed and reluctant in answering

my questions, notwithstanding they were in no way relative to her habits and condition. Her face was worn, while her eyes were restlessly darting from point to point. Her natural gait seemed undisturbed, yet when asked to close her eyes and walk she fairly swayed in uncertainty.

On stripping her for physical examination I found her mammæ, clitoris, and mons veneris unusually developed for one of her age. The rectum and vaginal orifice were found free from irritation, and during this inspection I carefully examined the hymen, which I found intact.

Inquiry into her past management satisfied me that her treatment had been thorough and complete. For over a year the best medicinal remedies had been employed in conjunction with blistering and latterly severe actual cauterization. Moral suasion, diversion of mind, and other rational methods were extensively carried out by the parents under the direction of an intelligent physician.

More than to continue in the same line and carefully watch my case I was, for the time, incapable of doing. By early January (1892), however, I had determined upon the removal of the clitoris, being fully convinced that the branch through which she gratified her pleasure lay in that organ. To confirm my belief, I thought well, however, to first hide the clitoris by a system of suturing, and await developments.

I carried that organ as deeply as possible into the cleft of the labia, and then, with four silver sutures, brought the latter into snug apposition, burying the clitoris entirely out of touch.

On the ninth morning the mother discovered that the upper suture was much tighter than we had left it, with a half-ring shaped loop projecting, as though it had been raised by the finger or some round implement.

We suspected the child's interference but did not caution her. On the following morning this same suture was found broken at the point of its first twist.

On first questioning, the child denied having disturbed it, but later confessed having done so and having masturbated four consecutive times during the night.

The sutures were now removed, and in a few days my friend Dr. C. B. Parker was invited into consultation with the view to justify further operative interference. After seeing the child, I think several times, that gentleman agreed with me that clitoridectomy under the circumstances should be resorted to.

On May 10, with the assistance of Drs. Gorden, Baldwin, and Sipher, the operation was performed, care being taken that the entire organ, with a considerable portion of its two crura, was removed. Ten days later she was up and about.

I have seen her several times since, and Dr. Parker also, I think, has seen her once or twice. During all these eighteen months she has shown no signs of returning to her former habits, save once. About six weeks after the operation the mother reported her as having had a very restless night, and that she confessed in the morning having attempted her old habit, but added, "You know there is nothing there now, so, of course, I could do nothing."

Twelve months ago she accompanied her mother to Florida, and in May (1893), while this paper was in preparation, I addressed a note of inquiry to the latter, as to the child's present health, in reply to which I received the following answer: "I am happy to say that our daughter is well, having regained her strength, appetite, and sleep, and withal is entirely free of that vile habit."

In concluding this paper, I would suggest that the physician in his analysis of these cases pay especial attention to the following points:

1. Learn, if possible, through the history of your case, the source of inculcation leading to this habit.

2. Learn, through your patient, if possible, the exact point of touch in the gratification of her desire.

3. Determine positively whether or not your patient's hymen is intact.

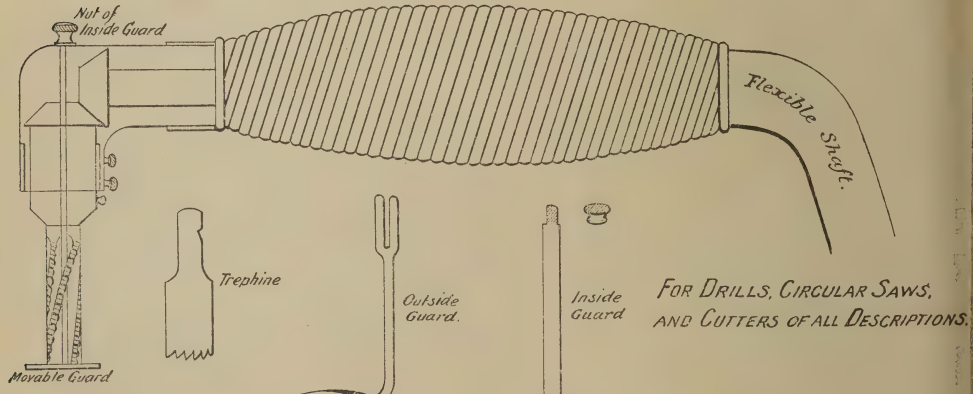
By ascertaining the facts covering the first point you will be informed whether the condition depends upon a practice taught by nurse or playmate, by foreign irritants, such as pin-worms, or by heredity; while under my rule,—namely, where the branch of the pudic nerve *supplying the clitoris only* is the point of titillation,—the second and third points will plainly tell you whether or not your case is one for operation.

A NEW TREPHINE AND BONE-CUTTER.

BY CROSBY M. WRIGHT, ESQ.,

Philadelphia, Pa.

THIS apparatus was, at first, especially designed for safely trephining thick or thin skulls. It will also bore, cut, or saw bone in many surgical operations, or in fact almost anything, smoothly and speedily. The elbow hand-piece, attached to the flexible shaft, has two bevelled cogs arranged inside, making the motion at a right angle, or if desired, instruments can be put in at the bend, to work on the straight principle.



Wright's new trephine and bone-cutter; can be used with a bicycle engine, electric engine, etc. The outside guard refers to its position on the drill.

Various drills, saws, trephines, etc., to suit the operation, can be firmly fastened in the hand-piece either by the thumb-screw, spiral-thread, or spring-catch. Guards may be fitted to the hand-piece as required, either springy or rigid, in some cases having a socket in which the revolving lower end of the tool fits, lessening vibration, etc.

When opening the cranium a trephine should be used slightly larger than the guard of the cutter that follows. Where the dura mater adheres

to the skull, an oval guard projecting ahead can be adjusted, then by working the hand-piece sideways the dura mater can be detached as the cutting advances.

With a circular guard arranged through a larger revolving tool the cutting can be to the right or left, backward or forward; it will cut whereever it may be guided, and the operator's arm has little movement.

By means of sliding sheaths secured in position by a spring catch, the hand-piece can be taken apart for purposes of sterilization. The sheath at the lower end is to be drawn over the thumb-screw that holds the tools when operating.

In regard to cutters, the best are a four- or three-grooved, toothed instrument, the teeth following the first set overlapping the next. These cutters revolving at high speed will perform rapid work with comparative absence of shock. The apparatus works with the ordinary flexible shaft.

The power used is electricity or a movable surgical engine, above which can be arranged a swinging rod with a pulley. Over the latter is a cord with sufficient weight attached to raise the hand-piece and flexible shaft when not in use; or for hospital service the cord may be hung from above, there being less vibration when so arranged. This allows of universal motion and gives confidence to the operator.

In the autumn of 1892 I saw a man that trephining might have saved from death. This determined me to learn how to operate for the emergencies of travel.

I studied how trephining might be done without shock to the patient on account of its employment in proximity to so delicate an organ as the brain. At last an apparatus was decided upon which seemed to meet all requirements, and I mentioned my invention to doctors and others two years ago, resorting to no secrecy, wishing only to see the first operation with my invention. I did not then fully describe my apparatus.

The further study of the structures to be operated upon made me more enthusiastic.

Having called on the manufacturers of flexible shafts, also on skilful surgical instrument-makers, the apparatus was pronounced practical. On March 8, 1894, I learned that an apparatus for trephining was being made, in fact was nearly completed. I called upon a prominent firm of dental supplies and was directed to Dr. M. H. Cryer, who kindly operated on cigar-boxes, etc., showing that he knew practically, as I had conceived long ago, that the calvarium or bone could be cut speedily, with little shock. I was overcome when I saw Dr. Cryer's splendid array of fine instruments and apparatus, all in good working order, skilfully manipulated by him in various ways. It certainly is a fine apparatus, but I claim that with my invention there will be still less vibration, and less constraint in operating. Certainly the old methods will be laid aside as soon as this is demonstrated to the skilful surgeon.

I am of course unfamiliar with the literature of the subject, but I can

positively state that the idea of the above instrument originated with me some two years ago, and that the only object which I have in presenting a description of the above instrument to the medical profession is the desire of benefiting my fellow-creatures in future trephining operations.

THE TREATMENT OF ABORTION.

BY R. E. SKEEL, M.D.,

Cleveland, Ohio.

SOMETHING more than a year ago an article by the writer, under the heading of "The Use of the Curette in Abortion," appeared in the *Medical News*, in which a plea was made for the more frequent resort to that instrument in the class of cases under consideration. The present article is designed to further bring out a few of the points to which the majority of the writers and teachers of obstetrics give too little attention. The first of these is the amount of illness which dates from an untreated or poorly treated abortion. The idea, which is so prevalent among some members of the profession, that an early abortion is only a slight matter, and needs nothing but rest in bed for a few days, together with the administration of ergot, is to my mind just as dangerous as the idea that a man may marry while he still has a chronic discharge from his urethra. Either of these conditions contains a latent power for evil which should not be overlooked, and both are frequently regarded as trivial, with what serious results any man may see who chooses to trace the etiology of his cases of metritis, salpingitis, and peritonitis, to say nothing of pyosalpinx and pelvic abscess.

With all due deference to the *rôle* which the gonococcus plays in the causation of serious disease of the female generative organs, I think it is safe to say that we are in danger of losing sight of the important *rôle* played by the ordinary germs of decomposition and suppuration in the causation of the same disorders, simply because our attention has been more forcibly called to the serious effects of gonorrhœal infection. Ordinary septic poisoning is the more important in one respect, inasmuch as it is so easily preventable in the great majority of cases. That the danger from this source is not exaggerated is shown by the fact that in the course of an ordinary practice and during the past year there have come under my observation six cases in which life was threatened as the result of neglect or careless treatment, to say nothing of the subjects of chronic metritis and subinvolution who date their illness from an abortion.

The two most common results of neglected abortion are sepsis—whether acute or chronic—and hemorrhage. By hemorrhage is meant not only that which results while nature is attempting to cast off the products of concep-

tion, but also that which occurs later, sometimes after the lapse of a month or more, and is the direct result of the retention of portions of placenta, secundines, or decidua. Acute septic poisoning generally shows itself either as a well-marked sapræmia from the absorption of decomposing organic material in the uterus, or as an acute inflammation of the uterus, tubes, and surrounding peritoneum. Chronic infection is harder to demonstrate, since many patients who are the subjects of chronic metritis have borne children and have lacerated cervices, and a metritis frequently results from either of these conditions. It does not require a very acute medical vision, however, to see the connection between a foul discharge following an abortion in which the drainage happened to be free enough to prevent systemic infection, and a subsequent subinvolution with leucorrhœa and menstrual disorders. How best to treat these cases and avoid such results is a subject worthy of serious study. In the first place we can expect no brilliant results unless we are cleanly about our work, and to this end antisepsis and not asepsis simply is of the greatest importance. A thorough douching with soap and water, followed by a one-half- or one-per-cent. creolin solution, or one-to-two-thousand or one-to-three-thousand bichloride solution, is a necessary preliminary. I know that many cases do well in which all this detail is not carried out, but the acme of perfection, so far as results are concerned, cannot be reached without it. A thorough sterilization of the hands of the physician is another requisite that is too often forgotten because all cases subjected to the danger of infection do not succumb to it. An examination can now be made without danger of rendering the patient worse than she would have been without any attention, and upon the condition which is discovered will depend the further treatment. If the pains are slight, hemorrhage not severe, and the os not dilated, the use of opium and viburnum prunifolium in full doses with a minute quantity of ergot will often result in a gradual and complete cessation of all dangerous symptoms. The advisability of the use of ergot may be called into question, but I am certain that the combination suggested above has acted better than when the ergot was left out, possibly because the amount used was too small to exert any influence upon the uterine contractions, while it did lower the blood-supply to the pelvic organs by its effect upon the arterioles. Of course absolute quiet both of mind and body is requisite if we hope to avoid the threatening danger.

If, in spite of a faithful trial of these means or without their having been used, the pains are hard, hemorrhage is threatening, and the os is dilating, the tampon is indicated. Even when the os is fully dilated, if no part of the ovum has passed, it may lead to its expulsion *en masse*, and thus avoid the operation that would otherwise be necessary. This tamponning should be done with cotton wrung from bichloride solution around the cervix, and then completed with baked cotton wrung from sterilized water. These tampons should be removed at the expiration of ten or twelve hours, and replaced again if necessary, but once or twice is all that is desirable.

If the os is not dilated or the ovum expelled by this time, it is safe to assume that other means are necessary. I have said nothing about the administration of full doses of ergot to favor the expulsion of the ovum, because I do not believe that it is necessary, and because it is almost as certain to result in a contraction of the circular muscles of the cervix as it is to promote the contraction of the muscles in the body of the uterus. In a case seen recently, two homœopathic physicians were treating a severe hemorrhage following the expulsion of a fœtus without its envelopes by large doses of ergot, with the result that the patient nearly lost her life before the partly-formed placenta could be removed from the cervical canal, where it was caught and held fast by the contractions of the powerful circular muscles.

In all probability the os will have been dilated by the tamponning if it were not so previous to its adoption, and the ovum may or may not have been expelled *en masse*. The number of cases in which this occurs is very small in comparison to the total number of abortions, but it is so desirable that every means should be employed to favor it.

If this has occurred, and a careful examination of the mass shows us that all parts of the ovum are present, including the decidua vera, further treatment is unnecessary, excepting such as will favor the progress of involution. It cannot be insisted upon too strongly, however, that this mass should not consist solely of the amniotic sac and its contents, but that the decidua vera and rudimentary placenta should both be present if our patient is to be regarded as out of danger.

Supposing, as is frequently the case, that some parts of the uterine contents have passed off when we are first called, and that we are uncertain as to how completely the uterus is emptied; the hemorrhage may have entirely ceased, and the cervix be completely closed, but that is absolutely no evidence that the uterus is empty. Only too often after one has persuaded himself that the trouble is passed, a fresh and alarming hemorrhage occurs or he is confronted by a case of septic intoxication. Actual examination of the expelled material is the only positive evidence of the completion of the abortion, and when this cannot be obtained, or if when obtained it shows that every portion of the ovum has not been expelled, the only scientific and exact method of treatment is the immediate removal of the retained portion. This is also true of those cases of incomplete abortion in which, after the lapse of a few days or weeks from the primary symptoms and supposed recovery of the case, hemorrhage or a foul discharge ensues. Occasionally we will fail to find anything in the uterus in those instances which might be called cases of secondary hemorrhage, but the bleeding is due to over-exertion, or subinvolution, or both, yet the operation will none the less surely check the hemorrhage. An assistant is very helpful, but, as I have remarked elsewhere, is not a necessity. A curetting can be done unaided, if help cannot be procured. Two instruments only are necessary. A speculum, either a bivalve or Sims, yet according to whether

one is assisted or not, a pair of dressing forceps, a curette, such as that of Récamier, or, what is perhaps better, one shaped like the Sims sharp curette, but larger and dull, an intra-uterine douche-tube, and a small pair of placenta forceps. With this armamentarium one can undertake to remove thoroughly all *débris* from the uterine cavity and save his patient the danger of sepsis. With the placenta forceps all large loose particles can be removed, the curette will then loosen the adherent decidua, and this can be picked out with the forceps and washed out with the douche. It may be necessary to go over the surface of the uterus several times before the muscular tissue of its walls is felt underneath the instrument, but inability to feel this firm resistance is proof that some soft foreign material still remains. So soon as the curette and forceps bring away no more material, a final intra-uterine douche should be given, and for this purpose a moderately strong solution of bichloride, such as one to three or one to four thousand, is perfectly safe, as the drainage is free and there is no danger of its retention. This should be used until it comes away perfectly clear, when the operation may be considered at an end, and the antiseptic pad placed over the vulva. If a trained nurse is in attendance, sterilized douches for the first week will promote cleanliness and favor involution; but in the absence of a skilled nurse it would be far better to leave the patient alone. A week or ten days in bed is usually as long as is necessary, and if care is used in carrying out the details, perfect recovery is an almost invariable result. Subinvolution is rare after this treatment, and if it should occur is readily and rapidly relieved by the use of galvanism with the positive pole in the uterus.

Rarely packing with gauze is indicated, as when the curetting fails to control hemorrhage, or inflammation has already occurred in the surrounding structures. In the latter case the serous oozing which it causes is of enough benefit to offset its disadvantages. As a routine practice I believe it does more harm than good by preventing the expulsion of any possible clots or small shreds which might have been loosened and left behind during the operation, and it is impossible for me to see any indication for its use excepting in the cases above mentioned. This procedure has its uses, but at the present time it is subject to many evident abuses which are bound in time to react and totally obscure its usefulness.

The three following cases are cited as illustrations of the serious results likely to follow careless or improper treatment:

Case I.—Mrs. J. P., aged thirty-two, multipara. On June 5, six weeks from last menstruation, was taken with a slight hemorrhage and some pain which continued for two weeks, but which she persistently refused to believe was due to an abortion. These symptoms gradually ceased, and were succeeded by a slightly foul discharge. The patient was informed of the necessity for the removal of the uterine contents, but would have nothing done. July 10, without any warning, a hemorrhage occurred of such severity that she lost consciousness within fifteen minutes. The uterus was curetted at once, with immediate cessation of the bleeding, but she has never recovered completely from the effects of the terrific hemorrhage, and still continues pale and weak.

CASE II.—Mrs. A. B., aged twenty-three, multipara. On January 15, after missing one period, the patient had pains and hemorrhage with passage of clots and pieces of ovum. She remained in bed for two or three days, when the symptoms all subsided, and she gradually resumed her household duties. Two weeks later she complained of feeling chilly at times, and a foul discharge from the vagina made its appearance. In a few days more she was compelled to go to bed, and when she was first seen her temperature was 105.5° F., pulse very rapid and weak, and she showed every evidence of acute septic intoxication.

The uterus was curetted the same day, and a large amount of decomposing *débris* removed. The next morning the temperature was 99° F., and it never rose above normal again.

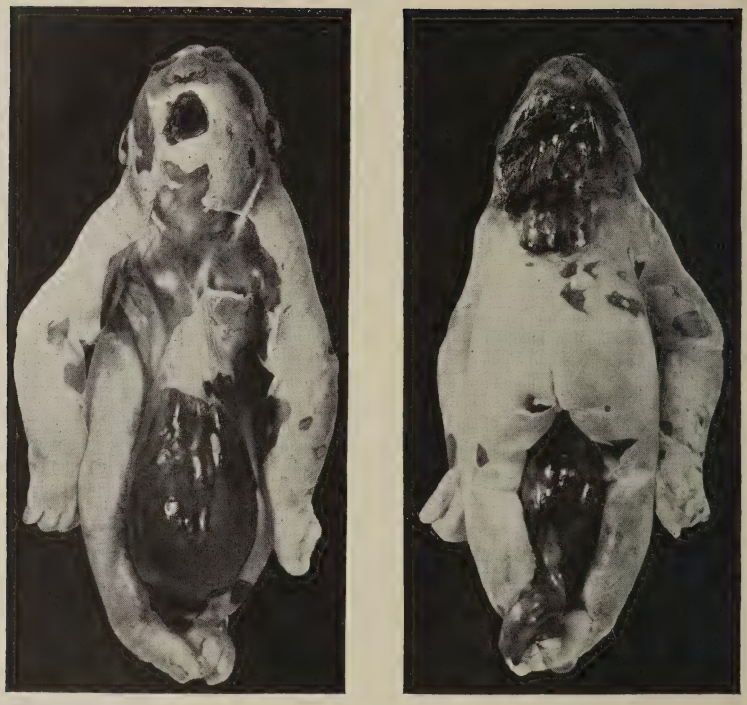
CASE III.—Mrs. J. L. C., aged twenty-five, multipara. This patient has had two or three abortions previous to this one, and never suffered any inconvenience from them. On this occasion, after missing one period, she began to flow and pass pieces which she described as looking like flesh. When consulted on July 20 I advised that a curetting was necessary, but this was declined, and she persisted in being up and about. The bleeding was followed by a foul lochial discharge, but she did not consider it necessary to again consult a physician until two weeks later, when a severe pain in the left ovarian region manifested itself. Examination revealed an induration over the entire pelvic floor on the left side. Cleansing the uterus produced only temporary relief, and the patient passed through a three weeks' siege with pelvic peritonitis, with finally an abscess formation on the left side. This was opened and drained through the vagina. She rapidly recovered her general health, but three months later an accumulation of pus took place in the left tube, for which abdominal section, with removal or drainage as found advisable, was recommended, but so far has not been accepted.

A CASE OF ANENCEPHALIC MONSTER.

BY A. E. AUSTIN, M.D.,

Professor of Medical Chemistry at Tuft's College Medical School.

MRS. B., aged forty-one years, has had two children and one miscarriage; menstruated last, March 24; six weeks afterwards began to have nausea and vomiting, which has continued off and on ever since. Noticed that she was much larger than usual at successive periods of pregnancy. Six weeks ago she began to have a watery discharge, which came at first in spurts and then in more or less constant dribbling. The fluid at first was slightly blood-tinted. Abdominal examination showed an enlarged uterus extending well up to the ensiform cartilage. The enlargement was symmetrical, and sense of touch revealed an indistinct fluctuating mass through which no fœtal parts could be felt nor could any fœtal heart-sounds be heard. Vaginal examination showed the cervix uteri to be opened sufficiently to admit the middle finger; entering the uterus to the second joint, no fœtal parts could be felt. The woman continued to have nausea, vomiting, and intermittent discharges of fluid until, on November 26, at two



Anterior and posterior views of the anencephalic monster described by Dr. A. E. Austin.

o'clock in the afternoon, pains began, at first being of moderate severity. When seen at 4.30, regular contractions of the uterus were occurring at ten-minute intervals. There was vomiting and she had had a slight chill. The uterus now appeared to be much smaller than is usual at full term. Extending above the umbilicus a foot could be plainly felt through the uterine wall, but no head could be found nor could the fœtal heart-sounds be heard. Upon vaginal examination, the cervix was found to be opened to the size of a silver dollar, and the entering finger first felt a small, smooth, pendent mass about the size of a large horse-chestnut. A little to the side and above this mass could be detected an ear with the helix directed backward, showing that the fœtus was in the opposite position. No cranial bones could be found. Pains continued weak and inefficient until about 5 A.M., when an effort was made to deliver by forceps; but the forceps slipped; and after two successive attempts the hand was introduced into the vagina, and the middle finger hooked into the axilla. By steady traction during the pains the fœtus was drawn down farther and farther until the shoulders appeared at the vaginal outlet. Here, for some reason then unknown, a long delay occurred in the extraction of the body. After delivery the fœtus was found to consist of an anencephalic monster, of which the following is a detailed description:

The monster weighed four and one-half pounds, and was thirty-one centimetres in length and of the female sex. Extending from sternum to pubis there was a pouch not covered by skin, to the end of which were attached the umbilical vessels; four and four-tenths centimetres from the end of the sacrum the vertebræ were not covered by skin, but the spinal canal was intact to the last dorsal vertebra; thence the canal was open for the first four cervical vertebræ, then closed. The frontal and malar bones were present, but the right and left parietals and occipital bones were absent. The brain was represented by a small pendent mass consisting largely of the envelopes of the brain and corresponding to the position occupied by the cerebellum. The spinal accessory nerve was present. The ears were normal; the nose was broad and flattened, with both nostrils present. There was no hyoid bone. The lower maxilla was present, and the sternum was normal. There was a double talipes varus.

In spite of the fact that the works on obstetrics state that these cases are not infrequent, yet in looking over the *Transactions* of the Obstetrical Society of London for the last eighteen years, I could find but eight cases, of which I will give a brief *résumé*.

One, reported by Dr. Carlyle, had "the head characterized by absence of integument, bony calvarium, and dura mater, leaving brain exposed. This monstrosity lived three days and took food readily." This is the only one, as far as I can find, that has lived longer than a few moments. Sass also reports a case, the vessels of whose umbilical cord broke into five divisions before reaching the placenta. Dr. Jones gives an account of a case of spina bifida, of which he says there was scarcely any neck, the head being rigidly

fixed on the spine, and the sac of the spina bifida projected but very little way below the occiput, looking like a piece of raw meat, and not covered by integument. Dr. Skene reports another, the head of which was strongly extended, the occiput and back of the neck were wanting, and the vault of the skull was entirely absent. Dr. Griffith reports one with hare-lip and cleft palate, and Roberts one in which the calvarium was wanting and the spinal canal was open as far as the first lumbar vertebra; there was also ectopia of all the abdominal organs.

CLINICAL LECTURES.

ON THE INFLUENZA OR "GRIPPE" MICROBE, AND INFLAMMATIONS OF THE MUCOUS MEMBRANES.[1]

A CLINICAL LECTURE DELIVERED

BY PROFESSOR CORNIL,

Professor of Pathological Anatomy and Bacteriology, Paris Faculty of Medicine; Member of the Academy of Medicine, etc., Paris.

GENTLEMEN,—We will study to-day the inflammations of the mucous membranes, commencing with that of the respiratory tract in its superficial manifestation of catarrh. There is one common factor in these inflammations, from the coryza of the nose to the catarrhal inflammations of the rectum, including all the mucous membranes of the digestive and respiratory organs. This whole series of membranes can produce these inflammations, which cause a large number of maladies, named, according to the seat of the disease, coryza, pharyngitis, laryngitis, tracheitis, bronchitis, gastritis, and enteritis, as well as all the maladies of the genito-urinary organs and those of taste, smell, etc. Let us see what this inflammation or catarrh is. First, as to its macroscopical appearances. We find a swelling of the mucous membrane, with a considerable increase in the vascularization, owing to the augmentation of the blood in the vessels.

When you have a cold in the head and cannot breathe well by the nose, it is because the thickened mucous membranes approach one another and prevent the passage of air. It is just the same when you have a pharyngitis; deglutition is then interfered with and you cannot swallow well, while speech is also difficult. This is the condition in all these inflammations. Following the swelling some pain is produced, and secretion in the parts is always increased. This catarrhal exudate is more or less opaque and thick

[1] Translated by Thomas Linn, M.D., by special arrangement with the author.

according to the quantity of epithelial cells it contains, for they hold the mucus, which sometimes becomes purulent, as in vaginal inflammations.

What becomes of the elements of the mucous membrane during these vascular and catarrhal troubles? This differs according to the region. Supposing we are examining the cylindrical epithelium of the nose or the larynx, we shall, as you know, find a layer or stratum, a sheet of conjunctive tissue whose epithelial surface is covered by a material that is more or less irregular, and the circulatory system will be seen forming a deep series of loops rising up to the conjunctive layer; all of this is covered with a cylindrical epithelial tissue surmounted by vibratile cells.

Now, if we inflame this structure by the aid of some toxic substance, which we may inject into the blood (such as cantharidine), or if we act upon it locally, by argentum nitras, for instance, we shall see all the vessels thicken, swell up, and dilate. The blood itself is arrested, owing to the accumulation of red blood-cells, and when this stasis becomes complete we may see an exudation appear. The white blood-corpuscles come out by diapedesis, or else they increase in number by the proliferation of the irritated cells and pass through—commonly in a very few hours—into the conjunctive tissue. This cellular infiltration often takes place in a few hours, and when the latter is full of white globules these now advance to the epithelial layer and force its barrier very easily. This they do by displacing a cell or by passing between two cells, for you know that the white blood-corpuscle does not measure more than eight or nine mikrons, and can form itself into a stick or baton-shaped mass, which by its amœboid movement can readily pass between fixed cells.

You can notice that the cells themselves modify their shapes in inflammation. The cylindrical become spheroidal and contain a great deal of mucin. When the lesions of the cylindrical cells are extensive the cells become mucoid and lose their vibratile, ciliated processes.

All these different changes are easy to follow in microscopical sections of the larynx and trachea. In certain places the cylindrical cells may preserve their forms, although there may have been many migratory cells, but again we find them transformed into mucoid cells and very much distended; they are in this state often called "calyciform cells," for the portion of the protoplasm that is not transformed now occupies the walls of the cells and the mucus is contained in the calyciform endings.

The mucous cells are of all shapes, but they always terminate in an opening, while the nucleus is found low down in the cell and deformed in shape. In the conjunctive tissue itself the fixed cells are tumefied, while in the glands the epithelium, both of the conduits and the cul-de-sacs, shows the same mucous degeneration and exaggerated excretion of mucus. Between the calyciform cells, some of the cylindrical ones can still be found, flattened out and having an oval nucleus, while they retain their ciliated epithelium. This is what is seen in a slight inflammation.

When the process is more intense, and the lesions are more extensive (as

I have shown in using cantharidine), the surface of the mucous membrane becomes covered with a coating of round, migratory cells which form irregular projections. The layer of cylindrical cells is now completely destroyed, and in certain cases the inflammation goes on until the epithelial covering is entirely lost.

In the mucous membranes, as you know, there are various glands which have a cylindrical epithelial lining, and these also join in the trouble, becoming dilated and filled with mucus.

So you will see that simple catarrhal inflammation is not so easy a matter to study as you may have thought. The important changes which it implies must be carefully noted; and all this becomes much more complex when we come to see the part that micro-organisms play in the appearance of catarrhal affections of the mucous membranes.

You are aware that in the normal state bacteria are found in large numbers in the nasal fossæ, mouth, and trachea, while a great many microbes are seen in the normal saliva and dental tartar. Many of these are not dangerous and need not be described, but with them are the well-known staphylococcus albus and aureus, the streptococcus, and the dreaded pneumococcus. These microbes do not appear to act as pathogenic agents or factors until some debilitating cause ensues in the patient, such as a traumatism, cold, or fatigue.

Besides these we should mention the mucogenic microbes which have the faculty of making mucus in certain cultures. Of these Babès has isolated six; one has a peculiar shape, being short, contracted in the centre, and having a capsule with rounded extremities. We can see filaments in the inside of the covering, which are portions of mucus that the microbe secretes, and all around the capsule we find similar signs. This bacillus has been compared to a silkworm with its cocoon around it, and itself occupying the centre. Upon gelatin it gives a half-liquid culture, and upon agar it forms diffluent drops which fall to the bottom of the tube. It causes death in rabbits when injected in large amounts.

The *grippe*, or influenza, is a catarrhal inflammation which generally begins in the nose, spreads rapidly to the throat and bronchial tubes, and may go on to the lungs, or may cause a broncho-pneumonia, or a bronchitis with a fetid odor that has been taken for pulmonary gangrene; but this disease is not often mortal. I was attacked with this form of grippe during the first influenza epidemic, but was cured very rapidly. These chest-troubles are not the only ones that influenza causes: we sometimes get an intense inflammation of the gastro-intestinal mucous membranes; other cases present severe pains in the joints, while now and then various vague neuralgic troubles evidently caused by this disease are brought to our notice; so that influenza is said to be a general or systemic malady.

It was during the winter of 1888–89 that we first had la grippe, to any extent in modern times, in France, and it has returned every winter since. It is a very serious disease, striking the young and old, the rich as

well as the poor, and visiting all countries. It is very dangerous from the complications it produces with existing maladies as well as by reason of those peculiar to itself.

Quite a number of investigations have been made to discover its microbe. At first all sorts of micro-organisms found in the sputum were charged with being the pathogenic agent, but later more definite studies have cleared up the matter. In 1890, Babès isolated two microbes that he found in the sputum of patients who had grippe. The first was one in the baton form, which was rather large, and gave a round, transparent colony when cultivated upon gelatine. The second one had the same baton shape but was much smaller, measuring only 0.2 μ. It is one of the smallest microbes known even in the smallest animal, such as the microbe of septicæmia in mice, which measures 0:1 to 0.2 μ.

Babès called this micro-organism "pale bacterium," having seen that it gave some very pale drops when inoculated upon gelatine, these drops containing the microbe and forming upon the bottom of the glass tubes. He also said that they could not be colored by Gram's method.

About this time Klebs found some elements in the blood of grippe patients that had a "flagellum," and which he called "grippe flagellata." They were seen in the red blood-corpuscles. We tried to find them, but did not succeed after many efforts made with the help of Chantemesse. In 1890 Pfeiffer, having examined a quantity of sputum coming from influenza patients as well as the pulmonary secretion of those who died of pneumonia at the time, found an extremely thin baton-shaped microbe that would not color by Gram's method. It did, however, stain with Löffler's blue and Ziehl's red.

These micro-organisms were found constantly in the sputum and in the mucus of the migratory cells. They could be found at all periods of the influenza. They appear to be the real pathogenic agent. They are baton-shaped, rounded at the extremities. They may be found grouped in pairs, and they are so short that they may be taken for diplococci; they have no capsule and have very slight motion. It is difficult to make a culture, as they will not grow on most of the ordinary culture media. To succeed, take a tube of gelatine that has an oblique surface, and put a drop of fresh blood upon it, and on the coagulated blood the culture should be made. In twenty-four hours some very fine, small, transparent drops will be seen, not larger than a pin's point, and it will require the use of a magnifying glass to see them. The culture will not keep more than a week or ten days. Pfeiffer found that human blood would make such cultures, but pigeon's blood is best, perhaps because it contains a large quantity of hæmoglobin and iron, which assist the development of the culture. The whole preparation must be kept damp, as the microbes will not stand drying. The temperature should be kept up to 42° centigrade.

We have constantly found these microbes in the culture-tubes of sputum from influenza patients. We injected cultures of it into the trachea of a

monkey; it died the second day after inoculation, from septicæmia, without any lesions of other organs. Pfeiffer has reproduced grippe in monkeys, but it does not "take," from the cultures, in any of the other animals that we have experimented upon.

Does this microbe exist in our blood? Pfeiffer does not think so, but Canon found it in blood in twenty cases. Koch saw Canon's preparations, and regarded it as the same bacillus that was cultivated by Pfeiffer and afterwards by Kitasato. This is an important question, for if this bacillus cannot vegetate in the blood it does not localize itself, and it does not bear a causal relation to the frequently observed neuralgias, the endocarditis, and many other symptoms. Its action would then be only upon the mucous membranes, and broncho-pulmonary grippe is the only prominent manifestation of its influence.

It seems proved that Pfeiffer's microbe is the real pathogenic agent in influenza or grippe; it being of course understood that all the other microorganisms found in inflammation of the mucous membranes are also to be seen, but it is this association of the one under consideration that makes the symptoms so serious in this malady.

THE CIRCULATORY DISTURBANCES OF AORTIC INSUFFICIENCY.

A CLINICAL LECTURE DELIVERED IN THE BUFFALO GENERAL HOSPITAL.

BY CHARLES G. STOCKTON, M.D,

Professor of Medicine in the University of Buffalo.

THE history of this patient is as follows: Mary K., aged forty-six, German, housewife, married, entered October 24, 1891. Has had five children, the last fifteen years ago. Was married at twenty-one, and again at twenty-six. Father died of phthisis, having been afflicted with boils. Mother died in childbed at thirty-five. Patient as a child was troubled with sores and boils, but this condition ceased after the birth of the first child. Menstruated at fifteen; was always regular. At nineteen had a thin fetid discharge which lasted six or seven years, until the second pregnancy. The child born at this time has always had weak eyes, and is troubled with chronic sores and boils. Patient had inflammation of the uterus about two years ago, which has persisted in spite of treatment. Has had rheumatism for a number of years. Complains of general weakness, dizziness, especially when getting up suddenly, and to a less extent when walking around, or even when sitting still, but not when lying down.

Here is a woman of middle life, who has worked hard for many years, who has borne a number of children, who gives a vague history of rheuma-

tism which we cannot admit has been articular, who has suffered within the last year or two with dizziness, shortness of breath, but particularly with weakness. The symptoms point unmistakably to circulatory disturbance, central in nature. I want you to look at the patient's hands and face, to note the condition of the blood-vessels as far as they are apparent through the skin, to note the general appearance of the patient, and thus to study the action of the heart in its remote effects. The lips are somewhat cyanosed, otherwise the face is pale. In the suprasternal notch, along the course of the jugulars, you will notice a distinct pulsation. The impulse of the radial artery is strong. Dizziness is usually due to partial syncope or lack of blood in the brain; occasionally it comes on from suffusion of the brain with blood. So far as we can judge from the face, there is a comparative bloodlessness of the head.

Let us see how far we can diagnose the condition of the heart without direct physical examination. The pallor, the venous distention, the violent pulsation of the vessels, indicate an aortic regurgitation. An obstructive lesion might cause the pallor and the venous distention, but would not be marked by pulsating vessels unless there were venous pulsation or an aneurism. On account of the extra effort necessary to overcome the resistance of an obstructive lesion, a mitral insufficiency might follow which would impede the flow of blood from the lungs and the right heart. A tricuspid insufficiency might result, and hence there would be a driving back of blood at each ventricular systole into the venæ cavæ, and the vessels of the neck would be seen to pulsate. Sometimes, in the beginning of nutmeg change in the liver, when that organ is tremendously engorged, a similar pulsation will be seen in the hepatic region. The pulsation is, of course, carried along the veins to other organs, but is not noticed except in the neck and occasionally in the liver. With an obstructive lesion, then, we would see the patient markedly cyanotic, the kidney would be engorged and its function disturbed, the urine would be scanty and highly albuminous, dropsy would occur in various parts of the body, and there would be a marked systolic venous pulsation in the neck. In this case these signs are not observed, the cyanosis alone existing to a slight degree.

In mitral obstruction cyanosis would be found relatively early, because the blood would then be thrown back on the lungs, the right ventricle would dilate, and there would be a tendency to repeated congestion of the lungs with shortness of breath on exercise, cough, and blood in the sputum.

Mitral insufficiency is the lesion which gives rise to the least disturbance in the general appearance of the patient. By a certain amount of hypertrophy of the left ventricle and auricle, even when the valvular lesion is quite marked, there is so good compensation that the circulation may not be particularly changed.

If in any of these valvular lesions there is marked weakness of the heart, the venous current becomes sluggish, and there is a congestion of all

the organs, and that "triple lesion"—of heart, liver, and kidneys—of which the older clinicians were continually talking. To-day we know that the great majority of valvular lesions are not very dangerous to life. The older men thought them all very dangerous, because they did not recognize them from auscultation, but only as they noticed dropsy, cyanosis, and engorgement of the viscera. To-day, with our improved methods of diagnosis, we know that valvular lesions may exist for twenty-five or fifty years without marked circulatory disturbance.

We have discussed three of the valvular lesions occurring in the left heart. We have yet to consider aortic regurgitation. In this lesion there is a full pulse, very full unless the heart has begun to dilate. In this case the pulse is not very full, and I believe that dilatation has begun. But, as soon as the fulness of the pulse has been felt, it is gone. This characteristic has given it the names of water-hammer and trip-hammer pulse, kicking pulse, and, from its describer, the Corrigan pulse. This pulse may not only be felt, but seen, and even in the almost capillary vessels you can see the red line appear and disappear. This capillary pulse may be well observed by pressing a watch-glass over the inner surface of the lip and noticing the alternations of color. This lesion is marked first by pallor, later, when the other valves have yielded to the continual hammering of the blood as it rushes back through the incompetent aortic valve, by cyanosis. This patient is in the intermediate stage when cyanosis is creeping in on the pallor.

If, as we have reason to believe from the inspection of the patient, there is an aortic regurgitant murmur, I shall hear it in diastole. The sound will be heard in the second intercostal space, just to the right of the sternum, and will be carried downward along the sternum, following the course of the blood-current. Such a sound I do hear in this case, and it is carried to the apex of the heart. There is no accompanying thrill either on auscultation or palpation.

The case is an interesting one, and from it we may learn many lessons. To-day the main lesson has been in observing the patient and carefully noticing such facts about the general circulation as have enabled us to diagnose the condition of the cardiac valves. The diagnosis of aortic insufficiency has been verified by auscultation.

The proper management of the case includes rest in bed, for of all valvular lesions this is the most serious. If the patient cannot give up hard work her days are numbered; yet, as far as I can see, there is nothing for her to do but to work out her short span of days, for there is no charity which provides for such cases. We can do little by giving medicines. We may give digitalis, but if we give much diastole will be lengthened, and the trouble will be made worse. We may give strychnine, ammonia, alcohol; but the heart will gradually lose its strength, and it is only a question of time when the ventricle will so weaken that it cannot contract, and thrombosis will occur, or the patient may die of asthenia.

Note on the termination of the case and the autopsy. By A. L. Benedict, A.M., M.D.

About a year after Dr. Stockton's clinical lecture Mrs. K. came under my care. She was too ill for systematic examination, and the heart sounds were very weak. Dilatation with considerable enlargement was demonstrable; also both aortic murmurs and a tricuspid regurgitant. She lived only two weeks, œdema of the lungs developing two or three days before death. The autopsy was fully reported in the *New York Medical Journal* of July 15, 1893. The liver was cirrhotic and presented fatty infiltration; the stomach was somewhat dilated and affected with chronic catarrh; there were chronic diffuse nephritis and pulmonary œdema, with some ascites. The cardiac apex was at the sixth rib, the outer border about two centimetres to the left of the nipple. The visceral pericardium was thickened anteriorly into a "milk spot" two centimetres in diameter. Beneath the pericardium were several petechiæ. The pulmonary valve was normal. The aortic leaflets were thickened and calcified; the aorta was extensively atheromatous. The tricuspid leaflets were thickened and the orifice dilated. The left mitral leaflet was short, the right long; both were thickened. Several papillary muscles showed fatty degeneration. The left ventricle was of normal thickness, the right very thin in some places, but, on the average, normal. There were no ante-mortem clots, death having been somewhat sudden, though expected for some time.

REVIEW OF MEDICINE.

MEDICINE.

IN CHARGE OF JUDSON DALAND, M.D.,

Instructor in Clinical Medicine and Lecturer on Physical Diagnosis in the University of Pennsylvania; Assistant Physician to the Hospital of the University of Pennsylvania; Physician to the Philadelphia Hospital and to the Rush Hospital for Consumptives.

Influence of Fatigue upon Gastric Digestion. (*Archivio Italiano di Biologia*, xvii.) By Salvioli.

The author has made a series of experiments regarding the influence of fatigue upon the gastric juice and digestion, especially upon animals with gastric fistulæ, and has proved that the power of digestion and the secretion of hydrochloric acid is considerably diminished after exertion. A cylinder of albumin, when introduced through the fistula into the stomach of a dog, is usually entirely digested within three hours, but, if the animal be compelled to exercise vigorously, but one-half of this quantity will be digested in the same time. Similar experiments have been performed with the same

results by Cohn (*Deutsches Archiv für klinische Medicin*, vol. xliii.) and others. It is therefore evident that, in patients that are excitable or nervous, and those with weak digestion, quietness should be insisted upon for at least one hour after the taking of food.—*St. Petersburger medicinische Wochenschrift*, March 10, 1894.

Palpation of the Vermiform Appendix. (*Post-Graduate*, April, 1894.) By George M. Edebohls, M.D., of New York City.

The author advises that palpation be practised by the fingers of one hand only. These fingers must carry the anterior abdominal wall down before them until the firm resistance of the posterior abdominal wall is encountered. As the fingers, flatly applied, now pass over the right inguinal region from the umbilicus outward to the right anterior superior spine of the ilium, it is absolutely essential that the posterior abdominal wall be distinctly felt along the whole route traversed. As the organs, and among them the vermiform appendix, pass in review, as it were, by gliding in succession between the fingers and the posterior abdominal wall, the touch soon learns to distinguish between them, and to recognize the appendix. After the appendix is detected, it is well to pass the finger over it, backward and forward, a number of times in succession; a more correct impression of its size, outline, etc., is thus obtained. The patient's position is dorsal, with the legs flexed upon the thighs, and the thighs upon the abdomen, so that complete relaxation of the abdominal walls is secured. The author considers the iliac arteries as helpful, because their pulsation indicates the posterior abdominal wall, and because the normal appendix is very constantly found about a finger's breadth outside of the artery. He also considers the McBurney point as indicating the origin of the appendix, and says that in most cases the appendix vermiformis may be palpated in health with ease, and with about equal facility in the two sexes. In one of the cases reported the patient was so obese that the appendix could not be felt.

Relation of Diseases of the Skin to those of the Internal Organs. (*Internationale klinische Rundschau*, February 25 and March 4, 1894.) By Professor Kaposi.

The author states that many forms of acne are due to general depression in nutrition, cachexia, emotion, etc., although most of the cases are associated with digestive disturbances. As urticaria may be occasionally produced by the sight of certain articles of food, he is of the opinion that this disease is not always of gastric origin. Recurrent eczema, so frequently attributed to alterations in the blood, is, in his opinion, due generally to lowered nutrition, and in chlorotic subjects it may become the starting-point of mycosis fungoïdes. Although the author has observed more than three hundred and fifty cases of pemphigus, he has been unable to determine its etiology. Senile pruritus is considered as more usually the result of

atrophy of the skin. He has also observed a case of elephantiasis Arabum in which no filaria were present.

[The writer has observed one case of well-marked elephantiasis Arabum at the Philadelphia Hospital, where the lower extremities were more especially involved, and in which repeated examinations of the blood failed to show the presence of the filaria sanguinis hominis.

A second case occurred in the practice of Dr. J. William White at the Hospital of the University of Pennsylvania, where, in addition to the involvement of the lower extremities, the scrotum was enormously hypertrophied, and the blood examinations were also negative. In this case an attempt was made to discover the parasite by previously soaking the hand in very hot water for fifteen minutes, but none were found.—J. D.]—*Universal Medical Journal*, April, 1894.

Orchitis in Mumps. (*Le Progrès Médical*, February 24, 1894.) By Catrin.

The author dwells upon the differential diagnosis between parotitic orchitis and testicular congestion, the latter of which is not grave, and does not lead to atrophy. Orchitis rarely precedes parotitis, and generally appears from the fourth to the eighth day after the beginning of mumps, although it may occur later. The process always begins in the epididymis, which may alone be affected. Fever is generally present.

The author recommends the avoidance of all violent exercise as a preventive of this complication. An examination of the semen in a case of double atrophy showed a decrease in the number of spermatozoa.

[Several cases of orchitis following mumps have been observed by the writer, and many of them have been characterized by hyperpyrexia. In one case the fever showed a constant tendency to rise above 105° F., even while under the influence of antipyretics.—J. D.]—*Universal Medical Journal*, April, 1894.

THERAPEUTICS.

IN CHARGE OF ALEXANDER D. BLACKADER, B.A., M.D.,
Professor of Therapeutics, McGill University, Montreal, Canada.
ASSISTED BY
D. I. EVANS, M.D.

On the Therapeutic Uses of Exalgin. (*London Lancet*, November 25, 1893.) By Thomas D. Savill, M.D.

The writer has employed this new analgesic in a number of cases in the Paddington Infirmary, not so much as a curative agent in neuralgia and allied disorders of the nervous system, as in the endeavor to relieve the pain associated with various chronic maladies. In no instance did the drug give rise to any inconvenient or uncomfortable effects, even in the presence

of cardiac disease, or phthisis, nor did it determine any of the symptoms of intoxication, which seem to have been manifested in the hands of other observers. He thinks that, if care be taken not to administer the drug to patients with a febrile temperature, or who are constipated, no ill effects are ever likely to be experienced. The drug was administered in one- or two-grain doses, repeated in some instances every one or two hours. He considers that in exalgin we have a valuable analgesic, prompt and efficacious, and without any of the deleterious after-effects observable in some of the other drugs belonging to the same chemical group, but one in which the dose may require to be occasionally increased if the drug is to be continued for a long period.

Blood Changes in Hydrotherapeutic Treatment. (*Centralblatt f. Klin. Med.*, December 9, 1893; *Brit. Med. Jour.*, January 6, 1894.) By Professor W. Winternitz.

The writer in this article describes his investigations, made upon fifty-six cases, either in health or with slight ailments, and particularly in anæmia. In a general application of cold to the body in varying ways, the blood taken from the finger and ear showed considerable increase in the number of red cells as well as of white cells. The hæmoglobin was also present in larger quantity, the increase reaching its maximum in one or two hours after the bath. The white cells are less constant in their behavior. The increase he ascribes to changes in the circulation, heart's action, tone of vessels, etc., and he considers the effect on metabolism virtually the same as if the cells were actually increased. He has shown that more oxygen is taken up, and more carbon dioxide given off, as a result of the application of cold. By methodical repetition the above changes should become permanent. He refers to the good results thus obtained in anæmia and chlorosis, and thinks that in this way the beneficial effects of hydrotherapeutic measures receive a scientific explanation.

On the External Application of Salicylic Acid in Articular Rheumatism. (*Bulletin Général de Thérapeutique*, January 8, 1894.) By N. Ruel.

The author recommends the following formulæ for external use in cases of articular rheumatism, both in its acute and chronic forms:

Salicylic acid, 10 to 30 grammes;
Alcohol, 100 grammes;
Castor oil, 200 grammes;

Compresses soaked in this solution are placed over the affected part, covered with oiled silk, and kept in place by a bandage. They should be changed twice daily.

Salicylic acid, 20 grammes;
Castor oil, 200 grammes;
Chloroform, 12 grammes;

This liniment is to be painted over the affected joints.

Dr. T. H. Manley (*N. Y. Medical Record*, February 3, 1894) strongly recommends a similar application, not only in articular but also in muscular rheumatism.

NEUROLOGY.

IN CHARGE OF CHARLES W. BURR, M.D.,

Pathologist to the State Asylum for the Insane, Norristown; Visiting Physician to the Home for Incurables; Visiting Physician to St. Joseph's Hospital, Philadelphia, Pa.

The Treatment of Certain Cases of Chorea by Hypnotics. (*The Lancet*, May 20, 1893.) By A. G. Barrs, M.D. Edin., F.R.C.P. Lond.

The author concedes that the great majority of cases of chorea can be cured by the combined use of rest in bed, feeding, and the administration of some drug, especially arsenic, in efficient doses. Those cases that are not amenable to this treatment he divides into three classes: (1) Cases in which the disease, though never assuming a violent or dangerous form, persists for weeks or months or even years in spite of treatment. (2) Cases of such grave character as to immediately threaten life by the violence of the neuro-muscular disturbance alone. (3) Cases which terminate fatally. It is to the treatment of the second class that he directs attention, and in which he advises the use of hypnotics in doses large enough to produce sleep. The hypnotics recommended are "chloral hydrate, chloralamid, sulphonal, and perhaps paraldehyd." The first is the most reliable; it has some disadvantages, but despite them all he is inclined to prefer it, if used with care and its depressant action on the heart guarded against. He illustrates his treatment by the report of five cases in which chloral hydrate, administered in large doses (twenty to two hundred grains in twenty-four hours), produced cures.

A Case of Hysteria in a Boy, characterized by Regularly Recurring Attacks of Lethargy; Treatment by Hypnotism. (*Brain*, winter number, 1893.) By Theodore Diller, M.D., of Pittsburg.

Following out the line of treatment indicated by Hitzig, the author hypnotized a mulatto boy, aged fourteen, during the interval between regularly recurring attacks of lethargy that had lasted exactly eight days in a long series of attacks months in duration. The interval had been one month, until shortly before he was seen by the author, and during that time about two weeks. There was no attempt made to cure by the first suggestion, the author preferring to defer the next attack. This he accomplished, in a manner; although the attack came before the time suggested, it was only five days in duration, and entirely modified in character. He was then hypnotized again, and it was suggested that he would never have another attack. Nine days later the hypnotism and suggestion were again renewed, but the patient came twelve days later in a semi-stupid condition.

The suggestion was made that he would be well in two days. He was not, but recovered in five days from the beginning of the attack, which was much less profound than usual. The patient was kept out of bed and made to eat twice during the attack.

In both of these attacks a lowered state of vital tone, as shown in many ways, was noticed. The skin was cold and clammy; there were sordes on tongue, lips, and teeth; the breath was very offensive; there was an appreciable diminution in body weight; the pulse was slow and sluggish; the excretion of urine and fæces was markedly diminished.

The author was prevented from continuing his observations by the patient's running away to relatives in a distant city.

The scars which the boy had from an injury upon the head, and which were the only signs of injury, were not painful; no hysterogenetic zones were discoverable; yet the attacks of lethargy in themselves, the absence of all objective symptoms, the mannerisms and *morale* of the boy, together with his extreme susceptibility to hypnotism, and lastly (and of great significance), the marked modification brought about by hypnotic suggestion in the character and duration of the two atttacks, indicated that they were hysterical.

Two New Cases of Vertebral Trephining for Paraplegia following Pott's Disease. (Sur Deux Cas nouveaux de Trépanation Rachidienne pour Paraplégie consécutive au Mal de Pott. *Arch. Clin. de Bordeaux*, January, 1894.) By J. W. Binaud and J. Crozet.

The two cases reported by these authors present many resemblances both in their previous pathology and in their functional and objective signs. The age was the same in both. There were the same primary manifestations,—pain localized in the dorsal region of the vertebral column radiating subsequently over the body and limbs; and approximately the same situation of the angle of curvature. In both, consecutive to the Pott's disease occurred a paraplegia almost complete, with sensory disturbances. The evolution of the symptoms occupied about the same length of time. Finally, to complete the points of resemblance, the operation performed on each was the same. The conditions found, however, were different. In the first case fungi were found external to the dura mater, and easily removed; the cord was found to be healthy beneath the dura mater. Relief from pressure was secured by resecting the vertebral arch lying below. In the second case, with the fungous condition, was found a softened and lacerated condition of the dura mater. Pus flowed freely from a cold abscess through the superior portion of the vertebral opening on both sides of the cord. Relief from pressure was secured by removing the vertebral arch. In the first case there was gradual relief of symptoms and returning power of locomotion. In the second the result was not so favorable, the pus showing that the disease was not limited to the vertebral arches and the epidural space.

With cases occurring so similar in outward aspect and symptomatology, and yet so different, how are we to judge which are to be benefited by operation and which not? It is difficult to formulate a rule, the diagnosis must become easier and more definite in some way.

The cases that terminate favorably are paraplegias that have become sclerosed through perimeningitis, those that are due to medullary compression of fungous origin, and those arising from cold abscess. The history of these two cases shows how difficult it is to make either a diagnosis of the exact condition or a prognosis. The results of surgical interference, however, are so favorable in certain cases that the authors feel that operation is demanded. It can do no harm, and may yield good results.

Hæmatomyelia and Acute Myelitis. (*Medical Record*, May 27, 1893.) By Joseph Collins, M.D., of New York City.

After an historical discussion of these diseases the author concludes that there are, though they are few, authentic cases of hæmatomyelia. He reports three cases,—one of hæmatomyelia, with autopsy, one of hemorrhagic myelitis, and one of acute myelitis,—and from these draws the following teaching as regards differential diagnosis:

"A consideration of the mode of onset is the most important. If the appearance of the paralysis is preceded by symptoms lasting upwards of a few minutes and of any intensity varying from the slightest, although the onset may in every other way suggest hæmatomyelia, it is safe to consider it hemorrhagic myelitis or acute myelitis. The occurrence of acute pain at the time of the attack, severe in nature and disappearing after a duration varying from an hour to a day, is suggestive of hemorrhage rather than of inflammation, while the presence of pain coming on a few hours after the attack points to myelitis. The ability to use the extremity or extremities shortly after the shock and the rapidly recurring inability is strong evidence of hemorrhage. The occurrence of a chill followed by the concomitants of fever, no matter how acutely the symptoms present themselves, is most presumptive evidence of inflammation, as is also the presence of any pathogenic or suppurative locus in any part of the body. The early appearance of trophic changes favors the diagnosis of acute myelitis. Likewise, anæsthesia is apt to be less well marked in inflammation than in hemorrhage, where frequently it resembles in its distribution the anæsthetic areas of syringomyelia; while the bladder and rectum are more liable to early involvement in acute myelitis than in hæmatomyelia. Rapid progress of the symptoms, and, on the other hand, rapid recovery, up to a certain point, would tend to confirm the diagnosis of hemorrhage, as would also evidences in other parts of the body of diseased blood-vessels. The presence of exophthalmos, tachycardia, optic neuritis, and ascending course of the paralysis favor the diagnosis of acute myelitis. As a rule, the fatality is about the same in both."

PEDIATRICS.

IN CHARGE OF T. M. ROTCH, M.D.,
Professor of Diseases of Children, Harvard University; Visiting Physician to the Children's Hospital, Boston.

ASSISTED BY

E. M. BUCKINGHAM, M.D.,
Instructor in Diseases of Children, Harvard University; Visiting Physician to the Children's Hospital, Boston.

The Insane Disorders of Childhood. (*Archives of Pediatrics*, February, 1894.) By J. Madison Taylor, M.D. of Philadelphia.

Insanity from the same causes that produce it in adults is rare in childhood; but mental defects are only too common, and often grow worse with startling rapidity unless wisely handled. All kinds of minor deflections that are apt to escape the attention of physician and parent, form most fertile soil for ineradicable mental defects. Active disease often disturbs the cerebral functions, and, although doing small structural damage, leaves the child in a weakened and unhealthy state, in which it needs the most judicious care. Other causes of mental instability may be found in the depression of the physical powers incident to want and misery. A still more important class comes from careless usages and vice on the part of the parents. Alcohol, opium, and even tobacco, reacting upon the nervous system of the parents, transmit their ill effects to the offspring. Even the cultivation of the emotions in the way of too exalted religious feeling and the like, exercises its bad effects upon the children. Far-reaching as these causes are in themselves, it is when they become interlaced and combined by marriage that they do their worst mischief,—as by the union of a drunken father with an overwrought, highly spiritual mother. Upon the hypersensitive nature of the child of such a union all exciting causes may act with tremendous power.

Turning to the child itself, we must put precocity down as a great peril, if not as an actual evidence of mental unsoundness. It is almost never good ground for the felicitations that are commonly indulged in by the parents; for not seldom does it predestine its possessor to neuroses. The infantile brain is very vulnerable at all times, and demands for its development the most wholesome conditions, and above all a due time to ripen. Very much mental stimulus, even if it be of an intrinsically healthy kind, is bad. The emotional nature of the child develops very early, and is apt to represent with great faithfulness the coloring of the mind of the parent; thus bad habits may become etched in upon the receptive centres, that careful training could have easily prevented if taken just as they were beginning. In infancy, heat and cold play a far larger part in starting mental disorders than they do in later life, as do also digestive disorders and the adenoid growths found in the naso-pharynx. Fright, either in the form of physical fear or in the more subtle shape of lurid and hyperbolic religious

instruction, exerts a large influence upon the delicate cerebral centres of even the healthiest children. Masturbation, at whose door so much blame has been cast, though its power has been much overrated, is yet responsible for not a little harm. Children exposed to long periods of want and exposure are almost certain to fail of normal development, and to show the strain by deterioration of the moral sense. This last, added to the fact that such usually inherit all kinds of mental and moral vice, makes the care of the little waifs and strays that are gathered into our municipal homes a peculiarly difficult task. Such must receive a more primitive form of instruction than that which is suited for children who have had a better start in life; the soil is so poor that we cannot count upon finding even the most rudimentary moral genius lying in it.

Dr. Taylor goes on to show the great difficulty that is found in arriving at statistical knowledge of the mental disorders of children, parents being particularly poor observers of the mental shortcomings of their offspring; moreover, if the suspicion of a child's mental unsoundness does fairly become established in the mind of the mother, she is certain to keep the secret safe, or only to divulge it after repeated and startling proof. Should she, however, have the rare faculty of correctly observing and weighing her child's mental deviations, she will be still less likely than another to be able to train it for its best good. For this reason it is found expedient to place such a child under the care of some one who will be less hampered in its management by emotional considerations. It is best to look among the home possibilities for some maiden aunt or widow who can do for it what the child's own mother might easily be taught to do herself for the child of another. This failing, the well-regulated asylum is the best place in which to carry on its education. The majority of the little patients must, from the nature of the case, be under the charge of the family physician, and upon him lies the responsibility of directing their care and teaching.

In arriving at a correct knowledge of the diseased mental state of a child, there are even greater difficulties than are met with in dealing with adults. The same skill, born of experience, will be needed, but to this must be added much tact, gentleness, and firmness. It is of the first importance for the physician to impress his personality upon his patient. He should represent the embodiment of power, helpfulness, and justice. Sometimes he may be the kind and considerate friend who pleads gently with the obstinate but sensitive child; more often he must be the kindly yet overmastering being to whom confession must sooner or later be made, and by whom obedience will be surely exacted. Much tactful shifting in the demands for unessential measures is at times advisable. Patience, firmness, and persistence are always necessary.

In dealing with the insane disorders of childhood a frequent blending of insanity with hysteria is included. Hysteria pure and simple often offers the more superficial appearances of insanity, but lacks the confirmatory clinical findings. The faults are chiefly relative to the phenomena of

onset, also to the symptoms indicating structural change, and to the true cause of the disease imitated. Hysteria is essentially an imitation, though by no means all a true simulation; it is therefore very important for the physician to be on his guard against giving to the hysterical or insane child any leading points on which to build up his groups of symptoms by ill-advised questions, or the still more dangerous habit of thinking aloud. Hysteria requires some sort of an audience, and the suspicion of vanity or other interest will often help us. As regards the diagnostic points given by Charcot, such as hemi-anæsthesia, affections of sight, hysterogenic zones, and motility, they cannot be readily or promptly applied; the physician must rely on his personal judgment, aided by what collateral evidence he can get.

Moral perversions are very hard to distinguish from the evil and vicious tendencies merely that are acquired by stupid, impressionable children. The moral imbecile is inherently bad and practically incurable. He is instinctively a thief and a liar; he shows a remarkable skill in mischief-making, and is sure to try the patience of parent or teacher. In dealing with such cases, it is of the first importance to ascertain whether we have to do with an ineradicable vice, which is probably of the nature of a disease, or with an affection that it will be possible to remove. For treatment, we must begin by putting the child under the best conditions that we can command; and having done so, exercise an infinite amount of patience and care. His training will require, in any case, a long time. He must be shown that he cannot be fully trusted or believed; but all the encouragement possible must be given him on the slightest signs of improvement. Too elaborate a plan of training must not be laid out.

In the management of children with hysterical or maniacal tendencies the first step is to gain their full confidence. This is best done by preserving a persistently frank, quiet, and yet perfectly friendly demeanor. During all first interviews it is better to avoid too direct and impulsive an approach; very much the same straightforward and courteous methods will win the child that prevail with adults. Differences in age or position between child and physician should be effaced as nearly as possible. Too strong condemnation cannot be given for the practice, said to be common with medical men, of making use of what may be called baby talk to their young patients. If this is true for our conduct in the few interviews that we have with the child, it is still more true for those who are to be with it constantly. Frankness and perfect honesty are certainly the only course for them to pursue.

Punishment is sometimes necessary, even short corporal punishment. Some low, vicious children are amenable to nothing else; but it should be administered with the greatest caution and judgment, and where gentle and firm domination or kind encouragement can gain the end, they are, of course, much superior. Yet misplaced leniency and the omission of a deserved punishment or rebuke is one of the worst of faults in dealing with the

moral imbecile. If such an one finds that he can deceive his would-be reformers, he is sure to go on to greater stages of perfection with every new effort, and rapidly becomes more and more degraded. Nothing so completely or permanently destroys all remnant of a moral sense in the idiot as the conscious ability to play upon the credulity of those who have undertaken the task of improving him.

SURGERY.

IN CHARGE OF HENRY R. WHARTON, M.D.,

Demonstrator of Surgery and Lecturer on Surgical Diseases of Children in the University of Pennsylvania; Surgeon to the Presbyterian Hospital, the Methodist Episcopal Hospital, and the Children's Hospital; Consulting Surgeon to the Presbyterian Orphanage.

AND

JOSEPH P. TUNIS, A.B., M.D.,

Assistant Demonstrator of Surgery in the University of Pennsylvania; Surgeon to the Dispensaries of the Presbyterian, Methodist Episcopal, and Children's Hospitals.

Cerebral Localization; Trephining. (Trépanation et localisations cérébrales. (*Gaz. des Hôp.*, November 30, 1893.) By Dr. Péan.

The author reports a very interesting case of a child four and a half years old, who received a pistol-bullet of small calibre in the right eye; it traversed the globe and entered the brain.

For about three weeks fever, cephalalgia, and restlessness by day and night were the prominent symptoms. Then there was intense pain on the right side of the head, principally at night, and at the same time a progressive weakening of vision in the left eye. An examination of the injured eye showed total blindness, with widely-dilated, immobile, and clouded pupil. A sympathetic infectious neuritis was diagnosed. Four subconjunctival injections of a one-per-cent. solution of sublimate produced absorption. Little by little the pupillary movements and vision returned. Ten weeks after the accident the patient, after headache and vague pains in the limbs, became paralyzed in the left arm.

The next day the following condition was present: the intelligence was clear; she answered questions well, and complained of mild pains in the right orbital region. There existed a slight facial paralysis on the left side and a left-sided monoplegia of the upper extremity. The lower extremity showed a slight paresis, but the patient could stand and walk. The diagnosis was of a lesion of the middle portion of the ascending frontal and parietal convolutions, caused by a peri- or intra-cerebral abscess. Later in the same day the patient had a Jacksonian epileptic crisis; the head was turned to the left and the left arm only was involved. The crisis was repeated during the night and the next morning.

The trephine exposed a pia mater red, with pale, arborescent streaks. The cephalo-rachidian liquid was opaque, milky, and manifestly purulent; about two hundred grammes of pus were removed. After thorough cleansing

with sterilized water, it was seen that the cerebral convolutions were depressed, and the space between the membranes and the dura was larger than normal. The wound was sewed up and an antiseptic dressing applied. The following day the child was lively, bright, complained of no pain, and began to move the arm. The next day the movements were better and the general condition satisfactory. The wound healed by primary union. Fifteen days after the operation the patient left the hospital. One month after, the condition was satisfactory, the movements of the arm normal, and the injured eye could count fingers at a distance of over five yards.

Affections of the Testicles and their Appendages in Hereditary Syphilis. (*New York Medical Journal*, November 18, 1893.) By R. W. Taylor, M.D., of New York City.

This author presents six cases having all the salient features and most of the minor and accessory ones of these affections, forming, he thinks, a satisfactory basis for the following deductions:

"The most common affection is orchitis, and while inflammation of the epididymis is sometimes observed, it is almost always a symptom of orchitis. Involvement of the vas deferens is quite uncommon, but occurs as a complication of orchi-epididymitis. Neither of these affections are really of frequent occurrence, as shown by the fact that in literature something like fifty cases are more or less fully described or alluded to. Testicular affections are among the rarer manifestations of syphilis. Pathologically, the testicular lesion has been recognized by Hutinel as early as the ninth and twenty-third days of birth. Clinically, however, it is seen generally in children from three to six and twelve months old; and in diminishing frequency in the second and third years. Somewhat exceptionally it is seen in later years, as in my sixth case at fifteen, and in a case mentioned by Fournier at twenty-four."

The condition of the parents is generally one of a tolerably active stage of syphilis.

Lesions of the Spinal Cord with and without Fracture—an Experimental and Clinical Study. (*Medical Record*, October 28, 1893.) By Thomas H. Manley, M.D., of New York City.

The author, after reporting six very interesting cases and citing others, gives the following general conclusions from his study of cervical fractures in man and experimental observations in animals.

1. Grave injuries of the spinal cord from injury in the neck, without fracture, are rare.

2. When paralysis immediately follows cervical injury, it clearly establishes the fact that the cord has borne serious damage.

3. That fractures which involve the respiratory centres (from the atlas to the fifth) are almost inevitably mortal.

4. Those below this point are sometimes within the range of operative

relief when the apophyses alone are involved, and are not so dangerous to life.

5. Fractures through the anterior osseous plane of the vertebral column —namely, of the bodies in the cervical and other regions—are not recognizable during life, and are much more common than is generally supposed.

6. The apophyseal type of fracture through the posterior plane is the most easily recognizable, and may occasionally be amenable to surgical measures.

7. Fractures here, as in all other segments of the rachidian structures, are characterized by a tendency to resist displacement, and when this does occur, to spontaneous reposition.

8. The cervical segment of the column may sustain permanent injury without the association of medullary lesions of any description which entails paralysis.

Removal of the Gasserian Ganglion as the Last of Fourteen Operations in Thirteen Years for Tic Douloureux, with a Description of the Trephine employed. (Abstract of a paper read before the Philadelphia County Medical Society, February 14, 1894.) By W. W. Keen, M.D., John K. Mitchell, M.D., and Dr. M. H. Cryer.

J. T. K., male, aged forty-two years. Until his thirtieth year he was in excellent health, and had no indications of any tendency to neuralgic disease.

In 1880, without any previous warning, he had a sudden attack of violent pain in the right upper jaw, nearly limited to one tooth. This came on during a meal. The tooth was extracted, but the pain continued in the socket from which the tooth was withdrawn until this healed, when the pain began in another tooth, and the process was repeated until three were drawn. Only one of these, the twelve-year-old molar, which had been filled some years before with tin and amalgam, was found in an unhealthy condition.

The next operation consisted in cutting loose the gum from the bone for the whole depth of the process both on the palatal and buccal sides, as it was supposed by Drs. Kirk and Levis that the pain was caused by the gums contracting so as to press tightly upon the nerve radicles.

After suffering great agony for some weeks, the upper teeth were extracted, the eye-tooth being broken and giving rise to necrosis, a portion of the upper jaw being removed afterwards by Dr. Garretson.

For a short time the pain in the face was much better, but became finally so very severe in the region of the infra-orbital that Dr. Garretson cut down upon the infra-orbital nerve and removed all the portion anterior to the foramen, finding the nerve intact. This was in September, 1881.

No further operation was done until February, 1883. Mr. K. matriculated in the Philadelphia Dental College in 1881, but on account of his

sufferings was obliged to desist from work. In the spring of 1883 pain returned in a small area in the side of the upper jaw, and the sixth operation, undertaken by Dr. Garretson, removed a portion of the upper jaw, exposing the antrum. The patient had comparative ease until the fall of 1883, when the pain began again, and he was variously treated during the succeeding four or five years without much relief.

In the winter of 1887–88 he suffered dreadfully, and in March Dr. Garretson made a resection of the second division of the fifth nerve on the affected side, this being the seventh operation, but how much of the nerve was removed is not stated.

In March, 1889, the third division of the fifth nerve, back to the foramen ovale, was resected by the same surgeon, with much relief; but the pain soon returned, and the ninth operation was the ligation of the facial artery in 1890. In September of the same year, the tenth operation took place,—an excision of the whole upper jaw. In September, 1891, Dr. Garretson did the eleventh operation, by opening, at the patient's request, the inferior dental canal and removing the nerve as far forward as the foramen.

From each of this frightful series of operations the patient experienced some temporary relief, with the exception of the one or two otherwise noted. On admission to the Orthopædic Hospital and Infirmary for Nervous Diseases, in May, 1893, he was suffering from three or four paroxysms of severe pain a day, for the relief of which he was taking half a grain of morphine twice a day, and more if the attack was too painful to bear. The right face was sunken, wasted, and seamed with the scars of the several operations; and, in spite of the removal or cutting of the various branches of the fifth nerve, the upper part of the face was still very sensitive, so that to twitch the right eyelid, or scratch the right eye, would cause a violent outburst of pain in the *lower jaw*, running forward to the corner of the mouth.

An area of diminished sensation was found upon the outside of the cheek extending from the lobe of the right ear throughout the distribution of the fifth nerve, under the right eye to the median line of the nose and to the median line of the lips. Sensation was not lost in this area, but much diminished, and heat and cold were perfectly distinguished throughout the region.

A few days after his admission a small corneal ulcer was observed upon the outer side of the right eye, midway between the pupillary margin of the iris and the periphery.

The first week in June, Dr. S. Weir Mitchell and Dr. Keen had a consultation and decided to examine the condition of the inferior dental nerve, in view of the possibility of its having regenerated so as to cause the pain which centred in the lower jaw. The severity and frequency of the paroxysms by this time had somewhat diminished from those which occurred on his admission to the hospital, but the smallest movement of the tongue

against the cheek or lips would cause paroxysms; to open the mouth at all widely or to put a finger against the cheek would also bring on furious pain. A small portion of the right cheek immediately below the eye was totally anæsthetic to touch, extending from near the middle line on the right of the nose down to and including the ala of the nose and out upon the cheek about one and one-half inches. The right angle of the mouth was capable of very little movement, and the lower eyelid was almost completely paralyzed.

The site of most severe suffering was at this time not at the mental foramen, but about an inch posterior to it. From this point the pain spread throughout the distribution of the inferior dental nerve.

Removal of the Gasserian ganglion was proposed by Dr. Keen at this time, but, as the patient preferred that a new attempt upon the inferior dental nerve should be tried first, Dr. Keen consented to this, and on June 10, 1893, this operation was performed.

The operation not giving relief, on the 28th of August Dr. Taylor removed the tissues about the infra-orbital foramen, but with only temporary relief, the pain returning, and not being relieved by even large and frequently repeated doses of morphine.

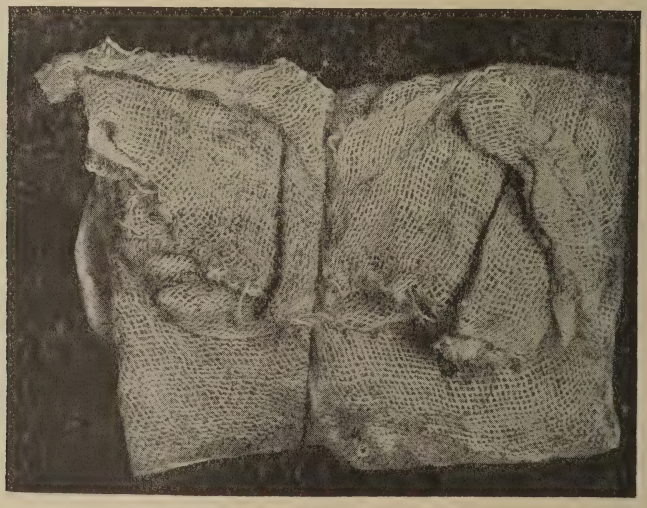
On October 18, 1893, Dr. Keen made an omega-shaped incision, the length of which, vertically, was three inches. One leg terminated immediately in front of the tragus, the other just in front of the junction of the anterior and middle thirds of the distance between the external auditory meatus and the external angular process. The temporal artery was cut, and this and a few other vessels required ligation. Dr. M. H. Cryer, with the new surgical engine of the S. S. White Co., hereafter to be described, and a circular saw of one and a half inches, with a guard, then rapidly and very successfully divided the external table, excepting at the two extremities. Here, fearing perforation before the inner table and the rest of the flap were divided, Dr. Keen chiselled through the superior four-fifths of the flap, passing through the inner table with ease, and then chiselled the extremities. At the posterior terminus, when only giving an ordinary light blow with the mallet, the chisel suddenly penetrated the skull to a depth of perhaps half an inch, and immediately a considerable hemorrhage occurred, showing that the posterior branch of the middle meningeal had probably been cut.

Dr. Keen says, "I then chiselled quickly through the anterior extremity, broke the bone, and reflected the flap. Here again was an additional trouble, for the anterior branch went through a distinct canal at the anterior inferior angle of the parietal bone, and of course was torn and bled freely as I turned down the flap of bone and scalp. A finger over each artery, however, almost controlled the hemorrhage, and in a very few moments I was able to place a pair of hæmostatic forceps on each. A cut was seen in the dura corresponding in length to the width of my chisel. A small, curved Hagedorn needle was then passed first around the anterior

branch in the dura, then the posterior branch was caught. The opening in the dura was sutured by catgut. The middle lobe of the brain was then lifted with care and great gentleness from the bone, but this was followed by hemorrhage which might well be called alarming. Lifting up the middle lobe with a spatula, I discovered that it was not, as I had feared, from the middle meningeal ruptured at the foramen spinosum, but that the blood came from the neighborhood of the ganglion. I could not think, with the gentleness I had used, that the cavernous sinus had been ruptured, but at all events the flow was too free, not only to allow of removal of the ganglion, but for the integrity of the man's life if it continued. The hemorrhage did not yield to hot water. I packed the wound twice with gauze, which arrested the bleeding temporarily, but on removing the gauze hemorrhage was as free as ever. Accordingly I packed in a considerable piece of iodoform gauze and closed the flap by six retention stitches, with the intention of removing the packing in two or three days and then removing the ganglion. Before packing, the dural wound was closed by a stitch of catgut."

Without any marked symptoms occurring, the wound, which was partly united, was reopened on the third day and the gauze (Fig. 1) carefully removed, a stream of hot water being used to loosen it.

FIG. 1.



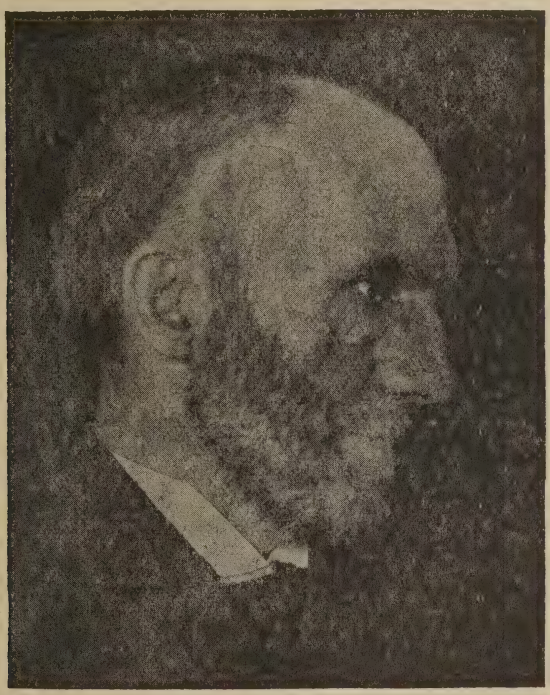
The figure shows the natural size of the piece of iodoform gauze (37 × 6 inches) packed in the cavity of the skin for three days without harm; seen sidewise. It weighed 2½ ounces, a similar dry piece weighing 2½ drachms, showing that it had absorbed 17½ drachms of fluid.

The hemorrhage, which was slight, was readily controlled by some small hot sponges. The cavernous sinus and the middle meningeal artery were both found intact.

The second and third divisions of the fifth nerve and also the little flap of dura which covered the ganglion were soon found, though great

trouble was experienced in separating the third division from the middle meningeal, as they ran very close together. Moreover, both at the second and third divisions, the slightest touch of the blunt hook, Allis's dissector, scissors, knife, anything, produced the sudden escape of at least a drachm of blood, which obscured the field of operation. Pressure by a small gauze sponge for a very few moments would cause the bleeding to cease, but the slightest manipulation produced its recurrence. However, after cutting both of these nerves and tracing them back to the ganglion, the little extradural sac was torn open, and with the Allis dissector and a small sharp spoon the ganglion was thoroughly destroyed.

Fig. 2.



The patient after recovery, showing scars of various operations.

The wound was then closed and the usual dressings applied. The patient's condition both throughout the operation and at its end was decidedly better than in the operation on the 18th.

He made a complete and rapid operative recovery, and was out of bed on the fourth day, the entire wound being healed. The highest temperature was 101.2° F.

At first it was feared that permanent injury would follow, as he suffered from delusions, aphasia, and other symptoms, but fortunately these all passed quickly away.

On the day of reading the paper before the society the patient was abso-

lutely rational, free from delusions and pain, and without any desire for his morphine, which, on the contrary, he loathes, after thirteen years of slavery to its use. Glasses were fitted by Dr. de Schweinitz which gave him excellent vision.

The ganglion removed has not yet been minutely studied. It certainly would seem reasonable to expect to find in the centre, after over-stimulation continued for so long a period of years, some signs of this excess of action in the nerve-cells. It has been supposed by some authors that the root of the malady lay in an atrophy of the ganglion; but were atrophy to be found, I should rather incline to regard it as a result than as the cause of the morbid condition of the nerve.

After an interesting and valuable description of the literature upon the removal of the Gasserian ganglion, the following table is given:

Table of Operations for Removal of Gasserian Ganglion.

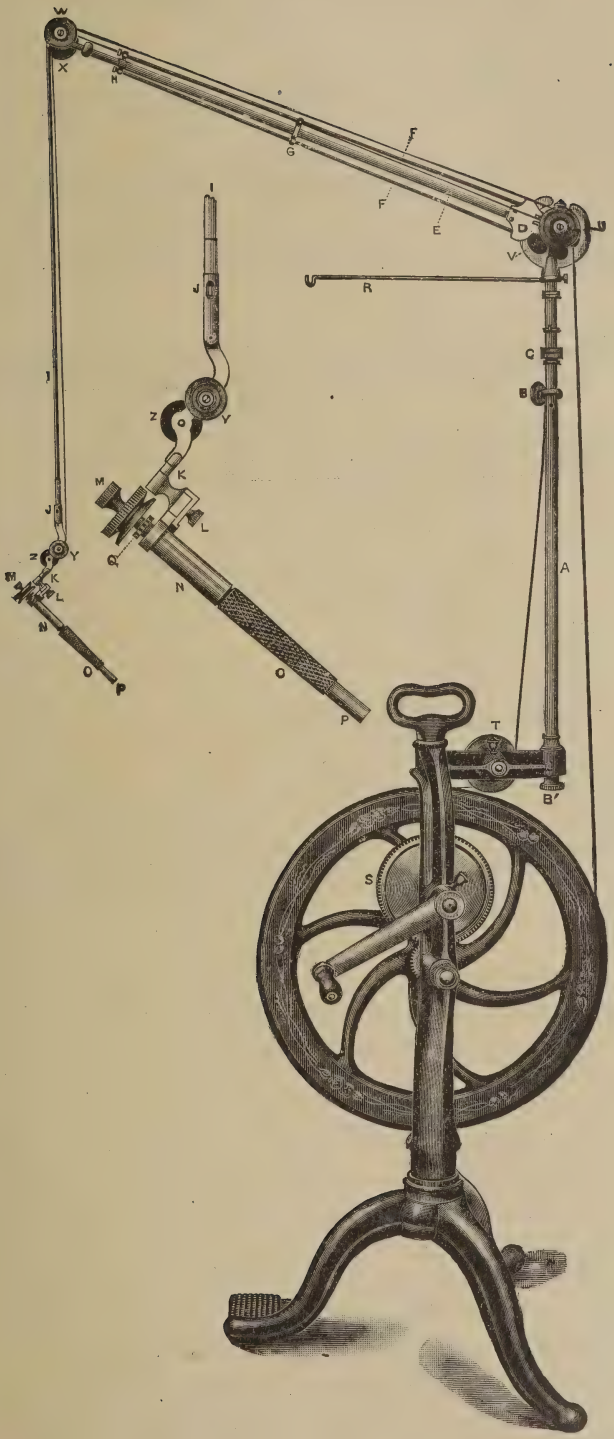
Author.	Reference.	Recovered.	Died.	Total.
Rose[1]	British Medical Journal, 1892, i. 261	5	..	5
Rose[1]	Lancet, 1892, ii. 953	1	1	2
D'Antona[1]	British Medical Journal, 1893, i. 81	1	..	1
Park[1]	Trans. Amer. Surg. Assoc., 1893, vol. xi. 238	2	..	2
Andrews[1]	Journ. Amer. Med. Assoc., Feb. 18, 1893, 180	3	1	4
Krause[2]	Annals of Surgery, Sept., 1893, 362	5	..	5
Roberts[2]	Proc. Philadelphia Co. Med. Soc., 1892, 490	1	..	1
Lanphear[1]	Pacific Medical Journal, 1892, xxxv. 647	1	..	1
Hartley[2]	Annals of Surgery, May, 1893, 511	1	..	1
Doyen[1]	Rev. de Chir., 1893, 391	1	..	1
Horsley[3]	British Medical Journal, 1891, ii. 1191	..	1	1
McBurney[2]	Annals of Surgery, 1893, i. 516, 519	2	..	2
Parkhill[1]	Medical News, Sept. 16, 1893, 319	1	..	1
Edw. Kerr[1]	Journ. Amer. Med. Assoc., Feb. 18, 1893. 181	1	..	1
Fernandez[4]	Siglio Med., Madrid, 1892, 804, 819; 1893, 4. 18, 36	..	1	1
Fowler[2]	Personal communication	1	1	2
Tiffany[2]	Annals of Surgery, Jan., 1894, 47	4	..	4
Finney[2]	Johns Hopkins Bulletin, Oct., 1893	2	1	3
Novaro[1]	Journ. de Méd., Chir. et Pharm., Bruxelles, Sept. 20, 1891	1	..	1
Keen and Mitchell[2]	The present case	1	..	1
		34	6	40

	Cases.	Recovered.	Died.	Mortality per cent.
[1] Rose's method	19	17	2	10.5
[2] Hartley's method	19	17	2	10.5
[3] Horsley's method	1	0	1	100.0

[4] Method unknown. Reference furnished me by Dr. Hinsdale, which could not be verified.

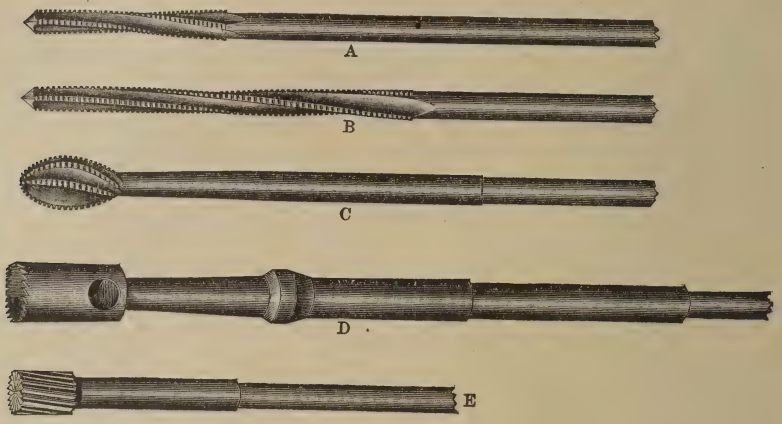
The engine used in this case, as described by Dr. Cryer, is comparatively a new one, having been made during the last summer; it embodies suggestions of his own in regard to giving great power, speed, and steadiness; the hand-piece has also been arranged so that different guards and cutting

Fig. 3.



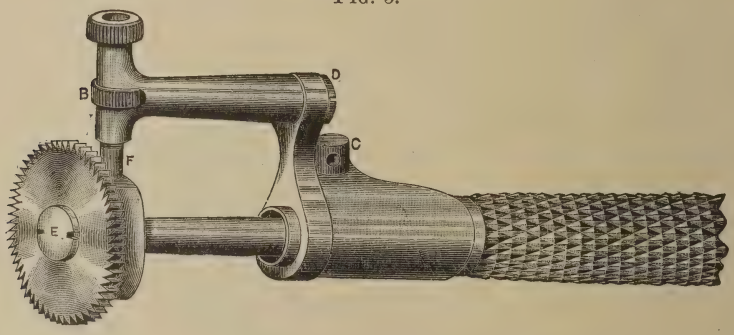
instruments can be readily and securely placed, the engines which have been heretofore used lacking these qualities.

Fig. 4.



Of the saw and guard (Fig. 5) used in making the initial section of the brain-case for the operation above described, Dr. Cryer said, "The guard,

Fig. 5.



F, is set by the thumb-screws, B, fixing the depth the saw shall cut. In this case it was the intention to cut through the outer table and diploë, but not to go through the inner plate; this was successfully accomplished, and, I thought, with rapidity. The inner table was broken by Dr. Keen, using mallet and chisel. This operation, as well as carefully-conducted experiments on the cadaver, demonstrated that this instrument was not all that was wanted for opening brain-cases, the difficulty being that skulls vary in thickness, not only in different subjects, but in individual cases. The cutting instrument should be so devised that both tables can be cut without danger to the dura regardless of the thickness of the bone and without the subsequent use of mallet and chisel. In order to overcome this objection I have devised the spiral osteotome and guard. (Figs. 6 and 7.) The spiral osteotome, one-half of an inch in length, has three cutting blades. The effectiveness of these blades is increased by a spiral screw, forty-four threads to the inch, cut around the instruments. This device adds twenty-two teeth

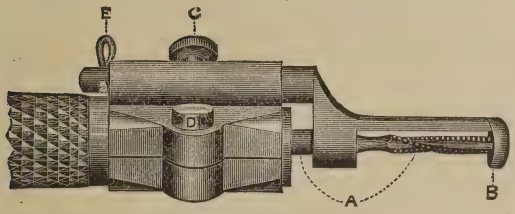
to the edge of each cutting-blade. The individual teeth are so arranged with reference to one another that the cut made by one tooth is overlapped by that of the one following; while the spiral arrangement of these teeth, in connection with the three spiral grooves, makes the burr perfectly self-

Fig. 6.



Twice the size of cutting-tool.

Fig. 7.



Full size of instrument.

cleaning, the *débris* being rapidly thrown out backward. The point of the burr when in use is guarded by a rounded, button-like attachment, connected with the nose of the hand-piece by means of a shank and collar, as shown in Fig. 7, at A. The free end of the burr is dowelled into a seat in the guard B, in which it revolves, which steadies the whole arrangement when in use, gives an added rigidity to the burr-shank, and holds the burr and guard in permanent relationship to each other. It will be seen that the principle in this instrument is simply that of a saw arranged to cut in a line with the axis of the shaft of the burr and not at right angles to it, as in the circular saw. Such an arrangement allows of cutting in any direction and upon curved lines. This feature is especially valuable in resection of the brain-case, inasmuch as fenestræ of any desired shape or size may be speedily made."

In operating for the removal of a portion of the brain-case with this instrument, after division of the soft tissue by the scalpel, a small opening is first made with a trephine (D, Fig. 4), five-sixteenths of an inch in diameter, and is passed completely through both tables of the skull and the button removed. The opening thus made affords a means of entrance for the osteotome, which, with its protecting guard, is next inserted and the section made along the lines previously determined, by running the engine at high speed and forcing the burr laterally in the direction desired. The button-like guard at the point of the burr absolutely prevents injury to the dura, which is pressed or dissected away by it from its attachment in the line of the cut as the instrument progresses.

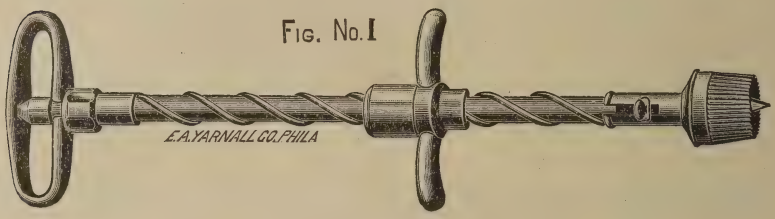
Dr. Cryer has devised similar spiral instruments (A, B, C, Fig. 4) for work in other situations, as in the nasal cavities, for instance. In this way the inferior turbinated or other projections of bone can be readily removed.

An Improved Aseptic Trephine. (*Annals of Surgery*, May, 1894.) By C. L. Leonard, M.D., of Philadelphia.

The author presents an improved method of applying the power to the ordinary forms of trephine crowns.

The accompanying cut (Fig. I.) represents the instrument ready for use.

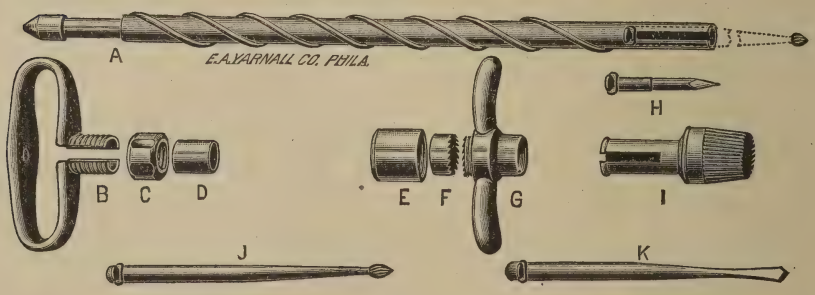
Fig. No. I



It consists of a fixed handle in which revolves a shaft, to which the force is applied, through a double-raised spiral by means of a sliding handle. By a simple device contained in the sliding handle the shaft is made to rotate only on the upward movement; there is therefore no reverse motion of the trephine, which is attached to the lower end of the shaft by the trephine pin. This restriction of revolution to the upward movement of the sliding handle lessens rather than increases the friction of the cutting edge, and by preventing jamming makes cutting easy and sure. One single upward motion of the hand, which is accomplished rapidly and without effort, causes three complete revolutions of the cutting edge, which is a marked improvement over the half rotation of the older form of trephine.

The mechanism and aseptic possibilities of the instrument can be more easily understood by reference to the accompaning cut. (Fig. II.)

Fig. No. II



The simplicity of the mechanism makes it almost impossible for the instrument to get out of order, while the construction makes antiseptic cleaning easy. The author advises the surgeon to allow the pin to remain down until a considerable depth has been reached, as otherwise it is liable to slip out of the groove. He also emphasizes the fact that, depending as it does for its cutting power on the rapidity of its revolutions, it requires no great force, and that such force should never be used. The rapidity of

cutting should always be borne in mind and the depth of the cut more frequently ascertained.

The instrument is portable, weighs about fifteen ounces, and may be obtained with crowns, drills, and burrs, of any size or in any number, of the manufacturer in Philadelphia.

On Intracranial Surgery. (*Edinburgh Medical Journal*, April, 1894.) By Professor Annandale, M.D., F.R.C.S. (Eng. and Edin.).

The writer gives an enthusiastic though practical paper upon the present status of intracranial surgery as especially represented by his own personal experience. As brain surgery has advanced so much on account of antiseptic surgery and brain localization, confirmed by means of electric tests, Dr. Annandale warmly advocates the great value of an exploratory incision, for diagnostic purposes, in obscure conditions of the brain. An examination is often necessary: 1. In intracranial inflammation and suppuration, which may be traumatic: this class of cases is by no means so common as before the days of antiseptic surgery, due to middle-ear disease or idiopathic. Brain abscesses are considered to be most common in the white matter of the brain, though occurring between the bone and the dura. No symptoms may be produced for a considerable length of time, or the symptoms may come on suddenly by rapid extension or bursting of the abscess. 2. Hemorrhage may be traumatic or non-traumatic. 3. Epilepsy, traumatic, syphilitic (operation is not advised here unless there are localizing symptoms which have resisted antisyphilitic treatment), developmental, and idiopathic: here an exploratory incision may be made at times. 4. Intracranial tumors. The most marked symptoms are pain in the head, giddiness, vomiting, optic neuritis, epilepsy, mental irregularities, and, in some cases, special localizing symptoms. Experience has shown that an uncertainty often exists as to the exact diagnosis, and that an exploratory incision is often necessary to determine its true nature. If the tumor be circumscribed and the malignant tendencies slight, the result is likely to be satisfactory. 5. Microcephalus and hydrocephalus: operations should be practised before the age at which the brain development ceases, in order to give room for it to grow, and some successful ones have been reported. In hydrocephalus, the operative treatment has proved very unsatisfactory. The writer would advise earlier operation in these cases. 6. Mental condition, including traumatism (justifiable), general paralysis (sometimes justifiable). Even exploratory incisions are not advised in general insanity, unless definite symptoms are found to exist.

The author concludes with the cautionary remarks that no new surgical procedures should be practised unless they are founded upon careful consideration, and upon a careful study of all new facts,—pathological, physiological, psychological, and clinical.

Many illustrative cases from the author's own practice are given in outline, and form a valuable addition to the paper.

GENITO-URINARY SURGERY.

IN CHARGE OF WILLIAM K. OTIS, M.D.,

New York.

The Radical Cure of Hydrocele. (*Boston Medical and Surgical Journal*, March 1, 1894.) By M. F. Gavin, M.D.

This author considers that no simple, uncomplicated case of hydrocele ought to be treated other than by injection. The use of tincture of iodine, the simple as well as the compound, is too often followed by failure to urge its use, which is often attended by a scene,—patients often fainting and suffering from griping pains, retraction of the testicle, nausea, and even vomiting; unpleasant things to have happen in one's office. For about six years he has treated all suitable cases of hydrocele by injecting half an ounce of a solution composed of equal parts of carbolic acid, alcohol, and glycerin; a small bulb syringe answers very well. A little care is necessary in the use of the solution. Protect the skin surrounding the canula with a little gauze or absorbent cotton, so as to avoid the burning sensation so easily produced on the tender skin covering the scrotum; allow the fluid to remain. The injection is practically painless, and no unpleasant effects follow its use. Patients are allowed to attend to their ordinary business, and in from two to four weeks the acute hydrocele disappears.

The Surgery of the Ureters. (Read in the Section on Surgery and Anatomy at the Forty-fourth Annual Meeting of the American Medical Association, June 8, 1893.) By Weller Van Hook, A.B., M.D.

In this masterly article on ureteral surgery Dr. Van Hook has arrived at the following conclusions:

The extrapelvic portion of the ureter is most readily and safely accessible for exploration and surgical treatment by the retroperitoneal route. Hence all operations upon the ureters above the crossing of the iliac arteries should be performed retroperitoneally, except in those cases in which the necessity for the ureteral operation arises during laparotomy.

The intrapelvic portion may be reached by incision through the ventral wall, the bladder, the rectum, the vagina, in the female, the perineum in the male, or by Kraske's sacral method.

The ureter is not only exceptionally well protected from injury, but by its elasticity and toughness resists violence to a remarkable degree. The histology of the ureters furnishes most favorable conditions for the healing of wounds. Longitudinal wounds of the ureters at any point heal without difficulty in the absence of septic processes, under the influence of ample drainage. In all injuries where the urine is septic before the operation, or where the wound is infected during the operation, drainage must be effected.

The chemic composition and reaction of the urine must be studied in all injuries to the ureter, the urine being rendered acid, if possible, and the specific gravity kept low. The pelvis of the ureter is, *cæteris paribus*, the most favorable site for wounds of the ureter, since scar-contraction is not so likely there to be productive of ill results. In aseptic longitudinal wounds of the ureter occurring in the course of laparotomy, suture may be practised and the peritoneum protected by suture. Transverse wounds of the ureter, involving less than one-third of the circumference of the duct, should be treated by free drainage (extraperitoneal), and not by suture. In transverse injuries in the continuity of the ureter, involving more than one-third of the circumference of the duct, stricture by subsequent scar-contraction should be anticipated by converting the transverse into a longitudinal wound and introducing longitudinal sutures.

In complete transverse wounds of the ureter at the pelvis, sutures may be used if the line of union be made as great as possible. In complete transverse injuries of the ureter in continuity, union must not be attempted by suture. In these cases union without subsequent scar-contraction may be obtained by the writer's method of lateral implantation, as described. In complete transverse injuries of the ureter very near the bladder, the duct may be implanted, but with less advantage, into the bladder directly.

At the pelvis of the ureter, continuity after complete transverse injury may be restored by Kuester's method of suture, providing the severed ends can be approximated by slightly loosening the ureter from its attachments.

Rydygier's method of ureteroplasty in such injuries may be tried if other methods cannot be utilized. The primary operation should at least fix the ends of the tube as nearly as possible together. In both transperitoneal and retroperitoneal operations the ureteral ends can be approximated by my method, even after the loss of about an inch of its substance. The use of tubes of glass and other materials for the production of channels to do duty in place of destroyed ureteral substance must be rarely satisfactory, and even if temporarily successful, the duct is almost sure to be choked by scar-contraction. The implantation of the cut ends of a ureter into an isolated knuckle of bowel is objectionable; 1, because the bowel is not aseptic; 2, because the operation is too dangerous. In injuries of the portion of the ureter within the pelvis, with loss of substance, the ureter should be treated as follows: if possible, the continuity of the ureter should be restored by the writer's method. If this is not possible, the ureter, if injured in vaginal operations, should be sutured to the base of the bladder with a covering of mucous membrane as far as possible, with a view to a future implantation or formation of vesico-vaginal fistula with kolpokleisis.

In injuries to the pelvic ureter during laparotomy, where the continuity cannot be restored, and where temporary vaginal implantation cannot be effected in the female, or vesical implantation in the male, the proximal extremity of the duct should be fastened to the skin at the nearest point to the bladder. In ventral ureteral fistulæ opening near the bladder, the ure-

teral extremity may, in some instances, be planted directly into the bladder without opening the peritoneum. In such cases where the ureter will not reach the bladder, a flap may be raised from the anterior vesical wall and reflected upward, extraperitoneally, to meet the ureter and form a tubular diverticulum. Such a flap may be so elongated by a preliminary operation to transplant the perineum back of the fundus, or by accurately suturing it there at a single sitting, that median ventral fistulæ of the ureter may be cured if they open at any point an inch or more below the umbilicus.

Symphyseotomy is a valuable and justifiable preliminary step in these plastic vesical operations. It is legitimate when both ends of the cut ureter open upon the abdominal wall to try Rydygier's method.

Implantation of one or both ureters into the rectum is absolutely unjustifiable under all circumstances, because, 1, the primary risk is too great; 2, there is great liability to stenosis of the duct at the point of implantation; 3, suppurative uretero-nephritis is almost absolutely certain to occur, either immediately or after the lapse of months or years.

Ligation of the ureter to cause atrophy of the kidney is unjustifiable.

Extirpation of a normal kidney for injury or disease of the ureter is absolutely unjustifiable, except where the ureter cannot be restored in one or other of the ways cited.

ORTHOPÆDICS.

IN CHARGE OF REGINALD H. SAYRE, M.D.,

Assistant to the Chair of Orthopædic Surgery, Bellevue Hospital Medical College, New York.

Spasmodic Torticollis Cured by Section of the Spinal Accessory Nerve. (*Annales d'Orthopédie,* January, 1894.) By Dr. A. G. Francis, of Hull.

A young man, twenty-nine years old, player on the trombone, developed convulsive movements of the right trapezius and sterno-mastoid muscles, which began after coming from a performance one evening, and increased gradually in severity till his head was violently twisted to the right every two or three minutes, accompanied by excessive, cramp-like pains. These movements persisted both night and day, and the head was strongly turned toward the left shoulder, and held so during the interval between the spasms. The patient also became subject to various illusions. After drugs of various kinds had been tried for months without result, Dr. Francis divided the right spinal accessory nerve through an incision along the anterior border of the sterno-mastoid muscle. For six days the spasms ceased and then recommenced slightly. At the same time the patient's mind became excited, and he armed himself with a carving-knife to defend himself against the doctors. He was sent to an asylum, and in a few days was discharged cured. In a month's time he resumed his occupation, the spasms having

ceased, though there remained a slight rigidity of the sterno-mastoid. After a while he began to have a return of the old symptoms, but on changing from the trombone to the contra-base these subsided and did not return; the stiffness of the sterno-mastoid also disappeared, and left no impairment of function.

Congenital Absence of the Entire Tibia. (*Annales d'Orthopédie*, March, 1894.) By Dr. George Joachimsthal, of Berlin.

This rare deformity occurred in a little girl, one and a half years old, who came to Professor Wolff's clinic. There was no hereditary taint, and in other respects the child was well formed. The right tibia was entirely absent, the foot in a marked position of varus, and the fibula, which was the only bone present in the leg, did not articulate with the femur, but could be felt behind it. The condyles of the femur were very prominent, and the patella could be felt in the ultra-condyloid notch. The fibula was two and a half centimetres shorter than its fellow and much thicker. The right buttock was somewhat smaller than the left. The leg was flexed on the thigh. Wald corrected the varus after tenotomy of the tendo Achillis. By means of a long incision free access was gained to the knee-joint. There were no semilunar cartilages nor crucial ligaments. The head of the fibula was pulled down until it rested between the condyles of the femur; no section being taken from it, in order to avoid still further shortening the leg. The capsule was then stitched. As the leg could not be completely extended on the thigh after the operation, it was put up in a slightly flexed position, in a plaster-of-Paris bandage, which also retained the foot in good position. By subsequent changes of the bandage the leg was brought into a straight line with the thigh. After some time, the foot being in good position without tendency to release, the bandage was removed from it and allowed to envelop only the thigh and leg. In this condition the child walked well at the time of reporting the case, but the fibula still had a tendency to slip out of place when the plaster dressings were removed.

The author has found thirty-eight other cases reported, occurring in thirty individuals.

Dislocation of the Atlas on the Axis, with Rotation. (*Annales d'Orthopédie*, March, 1894.) By Dr. Cyrus Legg, translated from the *Lancet*.

A young boy in playing leap-frog fell and struck his head in the angle formed by the trunk of a tree and the ground. His head was turned sharply to the left, when he was picked up and the chin lifted. The head was held immovably in this position. There was no pain on touching the lower vertebræ of the neck, but pressure against the upper two gave great pain, especially when it was made on the left side. Efforts at reduction of the dislocation by slightly lifting the head and twisting it to the right while the patient was seated proving of no avail, Dr. Legg laid the

boy down, and, while the body was held, succeeded in reducing the dislocation by a vigorous twist and jerk, the bone slipping back with a decided click.

DISEASES OF THE LARYNX, NOSE, AND SURROUNDING STRUCTURES.

IN CHARGE OF J. PAYSON CLARK, M.D.,

Physician for Diseases of the Throat, Massachusetts General Hospital; Physician to the Throat Department, Boston Dispensary.

The Occurrence of Hemorrhage after Operation for the Removal of Adenoid Tissue from the Naso-Pharyngeal Vault; with the Report of a Fatal Case. (*American Journal of the Medical Sciences*, November, 1893.)—The case reported by Dr. J. E. Newcomb is that of an anæmic, somewhat strumous boy, nearly four years of age. There was no evidence of hæmatophilia. The operation was done with the usual precautions. Gradle forceps and a Gottstein curette were employed. Soon after the child got home an oozing hemorrhage began. The *physician*, however, was not *sent for* until *twelve hours later*, when the child was found in a desperate condition from loss of blood. *Death followed shortly.* Of eleven cases of hemorrhage (reported by Rousseau), four occurred in the first decade of life, five in the second. The youngest age recorded is four years (Delavan), the oldest is twenty-eight (Ruault). The time after the operation when bleeding began varied from immediately to twenty hours. Tamponning was the favorite measure of relief employed. Patients from whom adenoid tissue is removed ought to be kept under careful observation for at least twenty-four hours.

Some of the Throat Conditions observed in Gouty Subjects. (*Medical News*, November 4, 1893.) By S. Solis-Cohen.

The gouty condition, if present, is probably generally a chronic one, with a tendency to exacerbation from such causes as exposure to cold or wet and indiscretions in diet. Inflammation is not a necessary feature of the disease. The most prominent symptoms are sensory, such as pains and various perverted sensations referred to "spots" at which no structural alteration adequate to explain the symptoms can be discovered. This localization is not present in all cases. Sometimes visible alterations in structure, as dilated veins or capillaries, are manifest at the painful spots. Sometimes there is general congestion and sometimes nothing extraordinary. In the larynx the epiglottis and arytenoid eminences seem the favorite seats of morbid sensations. In the acute stages there may be a diffuse laryngitis in which the mucous membrane of the palate, pharynx, and larynx is relaxed, puffy, and congested. There is often a feeling of fatigue after slight use of the voice, which is hoarse, and a constant desire to clear the throat of mucus.

In some cases paroxysms of nasal obstruction, with or without coryza, are met with. For confirmation of the diagnosis other evidence of the constitutional disorder is necessary. In the absence of articular inflammation urinalysis is an important diagnostic aid. Local treatment, which is palliative only, should be sedative and protective. Astringents may be cautiously employed during exacerbations. Dietetic, hygienic, and medicinal measures appropriate to the uric acid diathesis are indicated. Strontium bromide has been used internally with benefit.

A Case of Sarcoma of the Soft Palate. (*New York Medical Journal*, October 28, 1893.) Dr. W. K. Simpson believes this case to be an illustration of the degeneration of a benign (papilloma) into a malignant growth. A girl, sixteen years of age, had a multiple papillomatous growth removed from the soft palate. Sixteen months after, a reappearance of similar growths occurred. There was no evidence of inflammatory changes or thickening of the soft palate and no recurrence at the seat of the original growth. On removal the growth rapidly recurred again, began to lose its benign appearance and infiltrate the soft palate. A microscopical examination at this time showed the growth to be sarcoma. The whole soft palate was removed. Two months later the growth recurred in the naso-pharynx, speech and deglutition were interfered with, and the patient finally died of inanition, two years and three months after the first appearance of the apparently benign papilloma and eight months after the final operation. A microscopic examination of the original growth was not made. The writer thinks it possible that the reaction from the use of the cautery or lactic acid may at times be so great as possibly to favor a change to malignancy.

DERMATOLOGY.

IN CHARGE OF W. A. HARDAWAY, A.M., M.D.,
Professor of Skin-Diseases in the Missouri Medical College, St. Louis.
ASSISTED BY
C. F. HERSMAN, A.M., M.D.,
St. Louis.

Thyroid Gland in the Treatment of Skin Diseases.—Abraham (*Lancet*, January 13, 1894) gave his observations on the use of the thyroid extract in skin-diseases at a meeting of the Medical Society of London. Ninety patients had been treated with the remedy. The extract was administered in the form of tabloids of five grains each; of these three were given, as a rule, in a day. The cases were as follows: Psoriasis 65, lichen planus 5, eczema 7, chronic urticaria 2, lupus 5, prurigo senilis 1, and a peculiar papular eruption resembling adenoma sebaceum. Of the cases of psoriasis 17 were thrown out as not having been under treatment for a long enough

time to test the remedy; in the remaining 48 some improvement was noted in 18, but only 7 were treated with the gland alone; in 16 the result of the treatment was negative, and in 15 there was actual increase of the eruption during the administration of the drug. Of the cases of lichen planus improvement occurred in 3, which had at the same time local treatment. Of the eczemas 3 improved, but other treatment was used at the same time. No marked change was noted in the other cases except the case of papular eruption, which improved while other remedies were being given.

As the author remarks, it would be very difficult to draw inferences from these cases, as so many of them were taking other treatment in conjunction with the thyroid extract. To one reading the report, the inference is that the remedy has proved rather inefficacious.

The conclusions of the author, based on his experience and the reported results of others, are: 1. The ingestion of thyroid gland has no constant effect in psoriasis and many other diseases of the skin. 2. In some cases the eruption was aggravated. 3. In a minority of cases there was a marked curative effect. 4. There are at present no indications to tell us in what cases the remedy will be of benefit. 5. In a considerable number of cases disagreeable constitutional effects were produced. 6. Age and sex have nothing to do with the success of the remedy.

Dill (*Lancet*, January 6, 1894) reports three cases of psoriasis in which thyroid extract was used with the most striking benefit. In a case of an acute character in which chrysarobin locally, and arsenic and iodide of potash internally, had been used without benefit, there was marked improvement in three days under the administration of one five-grain tablet a day.

Balmanno Squire (*British Medical Journal*, January 6, 1894) reports the use of thyroid extract in the treatment of two cases of psoriasis in women, with entirely negative results. The preparation used was the extract prepared by Brady and Martin, the same which was used with such apparent good results by Bramwell. The cases received twice the dose that was given by Bramwell.

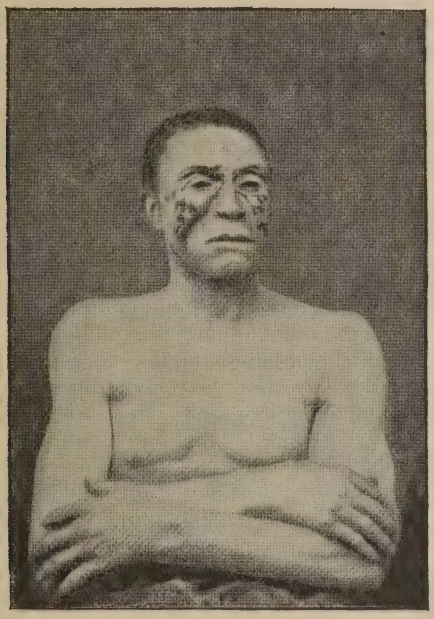
Belladonna in the Treatment of Certain Affections of the Mouth.—Koebner (*Medical Week*, November 24, 1893) recommends the use of belladonna in the treatment of affections of the mouth where caustic applications are to be used. Not only is the free salivation which often interferes with treatment checked, but the pain on mastication and deglutition, which is often complained of in syphilitic affections of the mouth, also rapidly disappears. The author recommends the following prescription:

Extract of belladonna, gr. vi;
Cherry-laurel water, ʒiss;
Distilled water, ʒiii. M.
S.—From ten to twenty drops two or three times a day.

Twenty drops of this mixture may be given half an hour before the caustic is to be applied; the dose may be repeated after two or three hours.

An Extreme Case of Leucoderma in a Negro; with a Comparison of Similar Conditions in Various Animals. (*Medical Record*, March 10, 1894.) By Dr. G. L. Magruder and Professor C. W. Stiles.

T. C. has changed in the past forty-five years from a dark, black negro to a uniform white color over his entire body, with the exception of a few spots almost symmetrically distributed over the cheeks and ears, and along the median line of the forehead. The body is otherwise entirely free from pigment. There is no loss of pigment in the eyes. A reproduction of the illustration used in the article gives an excellent representation of his present



condition. He is sixty years of age; his parents were black, and there is no hereditary tendency in the family to a similar condition. He has been healthy, has never had syphilis, and has lived a temperate life. When about fifteen years old the first evidence of discoloration appeared, near the nipple. Fifteen years ago the hands and face were still black, but since that time the progress of the phenomenon has been more rapid. Tactile sensibility is the same on both black and white areas; the white areas blister more easily upon exposure to the sun. The sweat-glands act freely, emitting the odor peculiar to the colored race. The hair is kinky and gray. Nothing in his history would give the slightest clue as to the cause of the leucoderma.

Leucoderma is said to be either progressive, stationary, or regressive. The cases so far recorded may be classified as leucoderma syphiliticum, L. traumaticum, L. parasiticum, L. following convalescence, L. nervosum, L. hereditarium, and L. spontaneum.

The authors consider that in animals there is scarcely any character

which is so variable in species as that of color, this being particularly true of the domesticated animals. Animals generally undergo some change of color in their lifetime, and this change may be sudden and more or less frequent, as seen in the chameleon, in frogs, in many fishes, etc., and is due to such causes as advancing age, different seasons of the year, sexual activity, etc.

At the conclusion of the paper, the writers sum up their views on this condition as follows:

1. It is exceedingly difficult to draw a sharp line between individual variation and pathological lesions.

2. Many cases ascribed to pathology—as albinism, partial or complete, and some of the cases of leucoderma and canities—can equally well (and probably better) be looked upon as cases of extreme variation of the species.

3. Man should be looked upon as an animal under domestication, and we must accordingly be prepared to find an immense variation among the races and individuals.

4. Albinism, both partial and complete, leucoderma, and canities of man, all have their parallels among other animals, domesticated and wild, and in many of which they have become racial or even specific characters.

5. These characters must, however, have begun as individual variations, and there is no reason to doubt that if systematic breeding experiments were kept up for a sufficiently long period, with albinos or leucoderms, or if these characters came into play in natural or sexual selection, races of albinos or leucoderms in the human species could be established.

PATHOLOGY.

IN CHARGE OF ALLEN J. SMITH, A.M., M.D.,

Professor of Pathology in the Medical Department of the University of Texas, Galveston, Texas.

A Contribution to the Study of the Symptomatology of Tumors of the Heart; Polypoid Tumors of the Left Auricle. (Beitrag zum Studium der Symptomatologie der Neubildungen des Herzens; Polypöse Neubildungen des linken Vorhofs).—Pavlowski (*Bolnitschnaja Gaz. Botkina*, 1893, No. 29–32; *Centralbl. f. d. medicinisch. Wissenschaften*, December, 1893) has collected eleven cases of polypoid tumors of the left auricle of the heart, one of which occurred in his own practice. The patient was a woman of fifty-five years of age, whose previous health had been excellent, but who complained upon admission to the hospital of cardiac palpitation, sensations of oppression in the chest, breathlessness, cough, general weakness, sleeplessness, and occasional girdle-pains. There was a slight fulness at the level of the second rib on both sides of the sternum; the apex impulse was weak and diffuse; the area of cardiac dulness increased;

the cardiac sounds were thick; and at the apex could be heard at systole a soft, low murmur. The pulse was small, and equal at the radials. Nothing noteworthy was made out in examination of the lungs; there was no cyanosis; the temperature was normal. From these symptoms the diagnosis of cardiac dilatation was made, and it was recognized that it was produced by some obstruction to the circulation, but it was not determined where the obstruction was situated or what was its nature. During the course of the woman's illness there (1) suddenly appeared, and as suddenly disappeared, a number of times paresis in the course of various nerves or branches of nerves, and (2) peculiar brief periods of cardiac palpitation, accompanied by feelings of suffocation and attended by cyanosis, profuse sweating, and transient loss of consciousness. (3) The mitral systolic murmur was easily heard when the patient was in a recumbent position, but disappeared when the erect posture was assumed. (4) There was decided alteration of temper. (5) The patient was very unwilling to take a sitting position, the symptoms being augmented by this posture. Eventually the woman died from increasing asthenia, cough, and hæmoptysis. At the autopsy the brain was found œdematous and anæmic, but free from embolism, hemorrhages, or areas of softening. The heart was enlarged, and on opening the left side there was found in the left auricle a pediculated growth of the size of a wine-grape, of a conical shape, somewhat nodulated and cleft. When the heart was held in the vertical position the lower part of the tumor extended through the mitral orifice into the left ventricle. In the lungs there were found a few hemorrhagic patches; the liver, spleen, and kidneys were congested, but otherwise unaltered. The paretic symptoms were in no way to be accounted for by the post-mortem observations; but the other phenomena could be easily explained from the presence and character of the tumor in the left auricle. When the patient was in the horizontal position the tumor, by interfering with the proper closure of the valve leaflets, caused a mitral insufficiency; in the erect position it dropped through the orifice, and caused a stenosis. Because of the movability of the growth the mitral orifice was probably sometimes completely obstructed, and thus are to be explained the suffocative symptoms alluded to; the irregular accession of arterial blood to the nervous centres may, moreover, account for the variable mental condition of the patient. In all probability the hæmoptysis and the hemorrhagic areas in the lungs were produced by stasis infarctions. The author believes it impossible to make an absolute diagnosis during life.

A Myxosporidian Infection in the Common Toad. — Dr. J. B. Whinery (*New York Med. Journ.*, December 2, 1893) calls further attention to the frequent infection of the common toad (*bufo lentiginosus*) by one of that group of the sporozoa known as the *myxosporidia*, the *chloromyxum Ohlmacheri*. This micro-organism was first described by Ohlmacher (*Journ. Amer. Med. Assoc.*, May 20, 1893), after whom it was named by Gurley.

It is of interest as another of a class of animal micro-organisms, certain individuals of which have within the last several years been discovered in connection, perhaps causal, with disease in man. The toads examined by the writer were obtained in the northwestern part of Illinois, in De Kalb County, and of seven examined, five were found infected, having been kept, however, for a time in captivity before they died. No marked symptoms were produced in the toad other than stupidity and slight swelling of the abdomen. There was usually found post mortem slight increase in the abdominal fluid, but no congestion of the abdominal viscera. The kidneys were enlarged and congested, and the parasites were found in the tubules of the kidneys and between the folds of the mucous membrane in the bladder. There was no invasion of the epithelium or the interstitial tissue of the kidneys.

These parasites are of an ovoid shape, about six micro-millimetres in length, and slightly greater in width. Around each individual is a shell which is faintly striated from the sides towards a ridge which traverses the animal in the median line antero-posteriorly. Thus the animal is seemingly divided into two parts or valves (as a bivalve is divided by the line of junction of its shells). At each end in the median line is a slight projection. Within, at the anterior end of the spore-like animal are two bodies called pole corpuscles or capsules, one in each valve, about three micro-millimetres in diameter. A filament arises from each capsule, and, penetrating the shell, projects from the anterior end of the spore. The sporoplasm, or plasmatic mass of the spore, lies posterior to the two capsules, extends from side to side of the spore, and has a somewhat crescentic shape, the horns of the crescent being directed laterally and anteriorly. This does not entirely fill the space posterior to the pole corpuscles, being surrounded by a space called the vacuole by Ohlmacher, but more appropriately named the pericystic space by Gurley. The parasites may be well examined in the fresh state by teasing a bit of the kidney in the urine of the toad or other fluid medium, and observing it in a hanging drop. They are readily stained by saffranin, or fuchsine and iodine-green. With this last, fuchsine and iodine-green the capsules and sporoplasm can be shown to differ in their chromophillism. The shell and projecting filaments may be well brought into view by treating the fresh parasite with a weak solution of potassium hydrate. Nothing is known of the life history of the micro-organism.

Communicability of Leprosy.—Beaven Rake, of London (*Medical Record*, December 2, 1893), as the conclusions of a paper upon this subject, makes the following statements:

1. Leprosy is probably due to a bacillus, and theoretically we must admit the possibility of its inoculation.

2. The experimental inoculation of leprosy in man or animals has never succeeded beyond the possibility of doubt.

3. It has not been proved that vaccination has conveyed leprosy.

4. While practical experience points to a possible communication of the disease from one person to another, the weight of evidence shows that this must be extremely rare.

5. Leprosy has steadily decreased in many countries without any attempt at compulsory segregation, while in other places it has increased in spite of isolation of lepers.

6. The immigration of lepers into leprosy-free countries has not in recent times been followed by any appreciable spread of the disease.

7. For practical purposes leprosy may be regarded as less dangerous to the community than tuberculosis, and as requiring no greater precautions than those taken against the spread of that disease.

Relative Frequency of Fibroid Processes in the Dark-skinned Races.—As a portion of the conclusions stated by Dr. Edward A. Balloch, of Washington, D. C. (*Medical News*, January 13, 1894), in a paper considering the anatomical, physiological, and pathological peculiarities of dark-skinned races, the following may be mentioned as of interest:

1. That there are three diseases characteristically frequent in the dark-skinned races, as shown by independent testimony of English, French, and American observers. These are elephantiasis Arabum, keloid, and the so-called uterine myomata.

2. That these are all mesoblastic growths, and that in general terms their essential characteristic may be said to be an increased development of fibrous tissue, due to proliferation of cells around the capillaries, these being increased in number and size, and having thickened tunicæ adventitiæ. They are true inflammatory scleroses.

3. That in respect to malignant growths the same connective-tissue type predominates.

4. That it may be laid down as a pathological law that there is some peculiarity in the dark-skinned races rendering them liable to growths of a fibrous nature in a degree greatly exceeding that observed in the white race.

CLIMATOLOGY.

IN CHARGE OF GUY HINSDALE, M.D.,
Lecturer on Climatology in the University of Pennsylvania, Philadelphia.

Climates Favorable for Consumptives. (*Canadian Practitioner*, February, 1894.) By Dr. P. H. Bryce.

The author shows that the prevalence of catarrh in the lake-shore localities in northern latitudes is associated with an excess of consumption, St. Catherines, Toronto, Ottawa, and Kingston affording a greater proportion of deaths from phthisis than Chicago, Detroit, Rochester, and Cleve-

land. After an able analysis of the various elements of climate in their relation to the practical use of health resorts, Dr. Bryce deprecates sending to high altitudes any who are advanced beyond the early stages of tuberculosis. Those who are marked especially by increased mucous secretion, with bacilli present, but without much pus, rapid pulse, with a slight elevation of temperature in the afternoon, and perhaps subnormal in the morning, with some loss of flesh and night-sweats, are advised to remain in dry climates of fifteen hundred to two thousand feet elevation until, at any rate, degenerative changes in tissues have been checked, or greatly ameliorated, and then only by stages should the patient pass to high altitudes. "On the other hand, where there is evidence of a disseminated tuberculosis, showing itself rather in the tubercular cachexia, and a wasting due to a catarrhal condition of the stomach, with loss of appetite and malnutrition, it seems probable that a change to altitudes of four thousand to six thousand feet may supply such stimulating effects, when the temperature is such as to make out-door exercise possible, as to be productive of the very best results."

Patients are enjoined to avoid absolutely residence in the larger towns and cities, and to obtain quarters, even if camping be necessary, in rural or suburban districts, wholly away from the air of towns. The air of hotels and boarding-houses in such resorts is inevitably bad; the presence of other invalids arouses a morbid curiosity, the mind of the patient becomes thereby introspective. He needs a healthful diversion from his own ailments which only an out-door life affords. Dr. Bryce lays great stress on mental occupation as the only preventive of *ennui* and nostalgia, the hardest of all symptoms to alleviate in our chronic invalids.

BOOK REVIEWS.

THE HEALING OF RODENT CANCER BY ELECTRICITY. By J. Inglis-Parsons, M.D., M.R.C.S., M.R.C.P. (Lond.), Honorary Fellow American Electro-Therapeutic Association; Fellow Royal Medical Chirurgical Society, etc. Price, five shillings. Published by John Bale & Sons, London, 1893. Pp. 82.

This little monograph on electricity in the cure of rodent cancer is by an author already well known for several contributions on the cure of carcinoma by the use of currents of high ampèrage. The claims made by him elsewhere for electricity in malignant disease have been attested by undoubted cures, and, coming at a time when accuracy of dosage is attainable, should receive the attention of all practitioners interested in the care of these grave affections. If carcinoma, sarcoma, and rodent cancer are, as now claimed by many, of parasitic origin, it is more than plausible that a tissue-destroying agency, such as a powerful electric current, shall compete with the knife in its radical elimination from the body. Of the relative merits

of electricity and the knife, as wielded at present, the pages of this work have something to say.

The novel facts advanced in the book are prefaced by remarks on the pathology, symptoms, and diagnosis of rodent cancer, in which its parasitic nature is regarded as probable. The action of electricity on protozoa is noticed, and a brief review of electro-physics is incorporated in the text, the latter, unfortunately, far too cursory to take the place of the painstaking study of the subject that should be demanded in one who essays this work.

By far the most interesting portion of the book is the relation of the cases that have been treated by the author's method, four in number, in each of which an actual cure is claimed. On these cases, and their results, depend the reasons for the existence of the work, as few readers at the present day will be satisfied with barren theories in dealing with so serious a scourge of mankind. That Dr. Inglis-Parsons has backed up his theories by facts appears to be evident, and the medical world must concede that a practically new remedy is available for the radical cure of rodent cancer.

But this new treatment of malignant diseases, accessible from the surface of the body by powerful currents that are known to be really powerful by actual measurement, is not the only novelty in the author's method. He specifies "current alternation" as necessary, or the reversal of the polarity of the needles that have been embedded in the morbid growth. Two needles are used, with a current of three or four hundred milliampères. The tissue-destroying action of the positive pole, which is wisely emphasized by him, is thus attainable at each needle, and it is more than likely that to this feature, and the actually great electrolysis that occurs, his good results are due, rather than to any lethal action of the "flashing" of the current through the lowly vitalized cells. The patient is anæsthetized, and as much as possible is done at one sitting. The advantages of electricity over the knife and caustics are thus summarized: 1. It causes no pain; in fact, for several days after the application sensation in the ulcer is abolished. 2. When it is applied there is no loss of blood beyond a possible drop or two. This absence of hemorrhage is a great benefit in more than one way. It enables the operator to see exactly what he is about, and to destroy no more tissue than is absolutely necessary, while it saves the patient from the debility which follows a large loss of blood. 3. By the electrical method the amount of destruction can be regulated with the greatest nicety. 4. The resulting cicatrix is smaller, and there is less deformity than when other means are employed.

The work is well written, and, owing to the new paths so hopefully pointed out to those dealing with these affections, should be speedily in the hands of every practitioner called upon to treat malignant diseases of the body surface.

G. B. M.

The Year-Book of Treatment for 1894. A Critical Review for Practitioners of Medicine and Surgery. Philadelphia: Lea Brothers & Co., 1894.

The tenth appearance of this well-known annual makes an extended review hardly necessary. It contains four hundred and sixty-nine pages of both direct and referential matter, exclusive of the index and the selected list of new books, new editions and translations. It is not an easy task to condense the remedial measures of a year into so short a space and at the same time preserve a readable style which is not too compendious; nevertheless, it seems to have been satisfactorily accomplished in this little volume. The chapter on diseases of the stomach, intestines, liver, etc., by Robert Maguire, is one of the most interesting to the general practitioner. This series has assuredly won a place in medical literature by collecting yearly, for a large number of busy physicians, the most important points in the progress of therapeutics the world over.

A. W. P.

Saunders's Question-Compends, No. 22. Essentials on Physics, arranged in the form of Questions and Answers. Prepared especially for Students of Medicine. By Fred. T. Brockway, M.D., Assistant Demonstrator of Anatomy at the College of Physicians and Surgeons, New York. Second edition, revised, with 155 illustrations. Philadelphia: W. B. Saunders, 925 Walnut Street, 1894.

This is the second edition of a work which the author intends to fill a place midway between the ordinary elementary books and that of the large standard work of Ganot. The attempt is very satisfactorily accomplished, and the book contains all the essentials connected with the subjects of heat, light, sound, and matter, together with a very full treatise on magnetism and electricity, including a description of the most recent inventions by Edison,—the phonograph and kinetograph. Numerous illustrations serve to elucidate the text wherever they are needed. The book is a condensation of valuable information and is well worth the price.

W. H. P.

Transactions of the College of Physicians of Philadelphia. Third Series, Volume XV. Philadelphia: Printed for the College, 1893. Edited by G. G. Davis. Pages, 261. Number of original articles, 24.

Proceedings of the Philadelphia County Medical Society. Volume XIV., Session of 1893. Edited by Lewis H. Adler, Jr., M.D. Philadelphia: Printed for the Society, 1893. Pages, 484. Number of original articles, 58.

Transactions of the Pathological Society of Philadelphia. Volume XVI. Containing the report of the proceedings from September, 1891, to July, 1893. Edited by Alfred Stengel, M.D. Philadelphia: Printed for the Society by William J. Dornan, 1893. Pages, 310. Number of communications read and specimens shown, 157.

These three volumes well show the ceaseless activity of the medical profession in Philadelphia. Many of the articles which were read before these societies have already been printed in the various medical journals throughout the country. Where there are so many excellent papers to review, it would, indeed, be difficult to make any selection for this purpose when articles are to be found from the pens of such gifted writers as Da Costa, Mitchell, Tyson, Wood, Hirst, Ashhurst, Willard, Wilson, Baldy, Guitéras, Musser, White, Porter, Hare, Price, Cohen, Allis, Parish, Randall, Forbes, Taylor, Welsh, Mills, Roberts, Jackson, Noble, Meigs, Griffith, Mays, Lloyd, Wharton, and Davis.

H. W. C.

An American Text-Book of the Diseases of Children, including special chapters on essential surgical subjects; diseases of the eye, ear, nose, and throat; diseases of the skin; and on the diet, hygiene, and general management of children. By American Teachers. Edited by Louis Starr, M.D., assisted by Thompson S. Westcott, M.D. Published by W. B. Saunders, 1894.

This latest addition to the list of American systems is a composite representation of the present status of pædiatry, there being no less than sixty-three contributors. A mere glance at the volume is sufficient to show the immense strides that have been made in this special branch during recent years. Alongside of it, such a book as "West," a fair representation of text-books on the diseases of children a dozen years ago, appears indeed an infant.

It may be fairly questioned what should constitute the subject-matter of such a work. In more than one system of recent years we have sections on the eye and ear, necessarily fragmentary and imperfect; the present is no exception. It is even more comprehensive: it includes chapters on special surgical subjects. If the operation for cleft palate is to be included, why not the allied one for hare-lip? Is the

operation for the cure of the latter defect so simple that it can be taken for granted? Why not leave the eye, the ear, and the special surgical topics to their respective treatises?

In the able introductory by the editor, the statement that delayed dentition indicates rickets needs qualification; and this it receives later at the hands of J. Lewis Smith, in his article "Rachitis." One would like to see in cases of failing or scant supply of maternal milk a more emphatic recommendation of an albuminoid diet of milk, cream, eggs, and meats; a lessened employment of the patented infant foods. What immense possibilities in preventive medicine lie in the suggestions of Leeds!

The only thing to be regretted about Osler's contribution on tuberculosis is that he is not allowed the entire subject, including tubercular meningitis, nearly always, perhaps always, an extension from a primary focus. In his "Practice" the entire subject is thus disposed of. The adoption of this plan obviates some needless repetition and reduces the subject to a more scientific and a more practical basis, that of etiology. By a curious typographical error, of which there are few, Villemin becomes Villiman! The mind of the average medical student will, no doubt, be thrown into no small confusion by learning in one part of a book that scrofula and tubercle are the same, and in another part of it, the differential diagnosis between syphilitic lesions and scrofulous, and between syphilitic and tuberculous (pp. 126 and 127).

In Part III. we have an able though rather condensed presentation of the important subject of the acute infectious diseases, including here tracheotomy and intubation. In a volume of twelve hundred pages, only one hundred and seventy-seven are devoted to it. The matter of treatment especially appears slighted. There is a singular unanimity that phenacetin is the safest (*sic*) of the chemical antipyretics and its use is repeatedly advised. We look through the entire book in vain for such a detailed description of the bath as its importance, utility, and safety as an antipyretic demand. True, there are references to it, but none are sufficiently full in detail to enable the reader to employ it intelligently.

The contribution of Shakespeare on cholera and that of Vaughan on the diarrhœal diseases are at the same time authoritative and classical. In the latter, especially, the causal factor rather than the lesions receives emphasis.

Forchheimer ably exposes the non-etiological *rôle* of dentition, but his views are not fully shared by the editor. The time has, however, passed by for assuming dentition as the explanation of most or all of the obscure ailments of infancy. The consensus of view seems to be that it is an occasional cause, and that sometimes the gum-lancet may be used with advantage.

It is implied that constipation is a cause of malnutrition. In infants it is more frequently a result. Of infantile cerebral palsy, it is said, tedious labor and not the forceps is the chief cause. A fact of such moment ought never to be lost sight of. The remaining parts, including diseases of the respiratory system, of the heart, and of the genito-urinary system, admit of little or no adverse criticism. The treatment of enuresis is especially worthy of praise.

The work is copiously and apparently well indexed; yet one looks in vain on page 552 for cæcal hernia.

The volume is a fine specimen of the bookmaker's art, of excellent typographical appearance, the paper is of good quality, and the half-tone plates, as a rule, are good.

D. L.

THE JOHNS HOPKINS HOSPITAL REPORTS. Volume III., Nos. 7, 8, 9. Report in Gynæcology, II.

It were well did the other large hospitals of the country follow the example set by this institution, in giving periodical and complete reports of the scientific work

done within their doors. The plan of the present volume is well conceived and excellently executed. Although there are some details which may be criticised, yet as a whole the work is a valuable acquisition to any library, and will be found of equal value to the general practitioner and the specialist.

The proposed method of measuring the conjugata vera will be found of exceedingly limited value, as it cannot be used in pregnancy advanced beyond the early months, and at best is liable to too numerous sources of error. Attention is forcibly called to many practical points, to none of more importance than the possible errors in diagnosis in pelvic diseases, due to accumulation of fæces in the rectum and sigmoid flexure, and the use of anæsthetics in pelvic examinations. Fæcal masses are not always easily indented, nor are they non-sensitive on pressure, as so universally taught. Many conditions which have been repeatedly overlooked during bimanual examinations are discovered where an anæsthetic has been used; and many presumably diseased organs have been found healthy under the same circumstances. If these important facts alone can find a substantial footing in the minds of the general profession, the work will have amply proved its value. The principle of ventro-fixation of the uterus in certain conditions is again emphasized.

The employment of artificial retroposition of the uterus to cover denuded areas of peritoneum is more than questionable, and the importance of urinal examination is over-estimated. Photography applied to surgery is given peculiar prominence and undoubtedly is valuable, but where it demonstrates as little as in the article on "Anæsthesia in Examinations," and elsewhere, its value is exceedingly doubtful. The wisdom of surgeons in general returning to the safe and sure method of hand disinfection with mercuric bichloride is demonstrated in the uncertainty as to the values of permanganate of potassium and oxalic acid. It is now asserted that oxalic acid is a more powerful disinfectant than the potassium salt. The volume contains numerous illustrations, many of which are marred by the reproduction of the faces of the operator and assistants. Illustrations of any given subject are invaluable, but this personal element can always be eliminated with advantage.

A mortality of over nine per cent. in the abdominal operations at first sight seems disappointing, but all things being considered, especially the mixed character of cases, it is doubtful if better results are being obtained by many other institutions.

J. M. B.

The Technique of Post-Mortem Examination. By Ludvig Hektoen, M.D., Pathologist to the Cook County Hospital, Chicago; Professor of Pathological Anatomy in the College of Physicians and Surgeons of Chicago. With forty-one illustrations. Chicago: The W. T. Keener Company, 1894.

Any one desiring to familiarize himself with the technique of a post-mortem examination can purchase this work with the feeling that the book will tell him in a clear and direct manner the method of performing an autopsy. No work upon this subject can be written unless it is more or less based upon the rules laid down by Virchow, and elaborated by such pathologists as Orth and Hamilton. The writings of these authors, as well as those of Delafield, Prudden, Blackburn, and others in recent literature, have been read and digested by means of actual work in the dead-house. The book is printed on good paper and the illustrations are mainly well executed.

H. W. C.

NOTICES.

RESIGNATION OF DR. WILLIAM PEPPER, AS PROVOST OF THE UNIVERSITY OF PENNSYLVANIA.

In order to devote more time to the practice of his profession, Dr. William Pepper resigned from the provostship of the University of Pennsylvania on April 23, 1894. The doctor remains professor of the Theory and Practice of Medicine and of Clinical Medicine. The following statement made by Dr. Pepper sufficiently explains itself:

"With deep thankfulness I recognize that the University has reached a stage of development and prosperity which justifies me in laying down the high office you intrusted to me more than thirteen years ago, and which I have held as long as it was possible to combine the administrative labors of Provost with the demands of medical teaching and practice. This time has now passed, and I beg therefore to tender my resignation, to take effect after the coming commencement.

"The close of the current session will witness the completion of the formative period of the University. From a group of disconnected schools there has been gradually organized a great academic body, complete in its unity and instinct with varied yet harmonious activities. Mutual confidence and co-operation have developed a system strong enough for effective central control, yet so flexible as to admit affiliation with many separate organizations.

"To our University is due the credit of establishing university extension in America, yet the important and successful society which controls this movement has no organic relations with the University, save that the Provost is *ex-officio* the honorary president. The Wistar Institute of Anatomy and Biology, a magnificent memorial of the founder of American anatomy, has a separate charter and is not owned by the University, yet is governed by a board the majority of whose members are appointed by yourselves. The University Hospital, which has grown so prosperously, is a special trust administered by a board of twenty-two members, only four of whom are appointed by the Trustees of the University.

"The Department of Archæology and Palæontology, under whose energetic operations there is developing rapidly a museum of high rank, is governed by a board of not less than thirty-six members, of whom only six are appointed by the Trustees of the University. Reference is made to these familiar instances to illustrate the admirable results which may develop under a system which excludes rigid control, and rests upon mutual confidence and a common devotion to a great cause.

"It has been a chief aim of your board to demonstrate to the people of this great Commonwealth that the University is truly the voluntary association of all persons and of all agencies who wish to unite in work for the elevation of society by the pursuit and diffusion of knowledge and truth.

No less important has been the establishment of the principle that the University, so far from being a private and exclusive corporation, is essentially and organically a part of the municipality. The large future of the University was secured when, in 1872 and in 1883, City Councils voted, without a dissenting voice, the transfer to the University of splendid tracts of ground in consideration of the establishment in perpetuity of fifty free beds in the hospital for the poor of Philadelphia, and of fifty prize scholarships in the college, to be awarded to graduates of the public schools of Philadelphia. The subsequent accessions of territory which have brought the domain of the University up to fifty-two acres, in a compact body in the centre of the city, have been the logical consequences of these great steps; and so faithfully have all the trusts and conditions been executed, that it has come to be recognized by the municipal authorities that it is more profitable to the city to give freely to the University anything in its power to bestow which is needed for the development of that institution than to dispose of it elsewhere even at a great price. It needs only the resolute continuance of this wise policy to secure for the University full recognition as a branch of the City government with a duly accredited representative of its great constituency in her Councils.

"Progress has also been made towards the establishment of the essential principle that the University is in right, and should be in fact, the head of the educational system of the entire Commonwealth. We may fairly claim to have done much towards securing a recognition of the view that the encouragement of higher education, by the municipality and the legislature, is as proper and important in the older communities of America as it has been decided to be in the newer States.

"While the unification of the University and the establishment of broad lines of policy may seem to be the most important work of the past thirteen years, it will be found that the resources of the University and the educational work in each department have been successfully promoted. In 1881 its property was fifteen acres, while at present there are owned or controlled by the University, in a continuous tract and solely for educational purposes, not less than fifty-two acres. The value of the lands, buildings, and endowment in 1881 may be estimated at $1,600,000; it is now over $5,000,000. Prior to the date of the late John Henry Towne's great bequest, the University had never received a single large gift or legacy. During the current year, ending September 1, 1894, there will be acquired in lands, buildings, money, and subscriptions not less than $1,000,000. The members of the teaching force in 1881 numbered 88, and the students in all departments 981; at this time the former are 268, and the attendance has reached 2180, representing every State of the Union and no less than thirty-eight foreign countries. The College Department has attained a national distinction, and its complete reorganization, which has now been accomplished successfully, gives sure promise of sound and rapid progress. The Medical School has been advanced to pre-eminence in equipment and

prosperity, while plans now maturing will place it abreast of the great schools of Europe. The Law School has effected the prolongation and elevation of its curriculum, and has deservedly won national repute. Encouraging progress has been made towards providing an admirable building on an approved site, so that the future eminence of the school is assured. Gratifying reports may be made of the position of the Dental and Veterinary Departments; and well-considered plans for their still further development need only time for their fulfilment. Upon this vigorous basis rests the Department of Philosophy, which, although organized as late as 1884, and still without special endowment, has already one hundred and fifty-four students. It represents the University in its highest and best intellectual life; it affords inspiration to teachers and students; it has enabled us to extend the richest privileges of the University to women on equal terms with men; it points the way to large endowment of rich research and advanced scholarship.

"The necessity of dormitories to the development of the best University life has come to be clearly recognized by your board, and generous friends stand ready to supply this important need.

"It is pleasant, in these days of strength and prosperity, to reflect upon those of doubt and struggle, when ridicule met the assertion, the truth of which is now freely conceded, that nowhere can a great university be developed so favorably as in a great city.

"In closing my term of service as Provost I may be permitted to allude to the motives which impel me to this step. The labor of these thirteen years has been so severe, in connection with my professional duties in the Medical School, and with the extensive medical practice necessary to provide the funds which have enabled me to initiate nearly all of the large movements undertaken during this time, that I have often felt that my life was specially preserved for the work. It has, however, been growing evident, for several years past, that the time was approaching when the immense extent of the University interests would demand the undivided activity of the most energetic man. It has now become necessary for me to choose between administrative work and medical science. My devotion to the latter has determined the choice.

"No official has ever been associated with more affectionate and indulgent colleagues, or has enjoyed more loyal co-operation than has been extended to me. I am confident that the choice of my successor will be wisely and promptly made. I do not leave the service of the University, but will remain, with more free hands, ready to serve her every interest with utmost devotion.

"I invoke upon your continued labors in the government of this grand institution the richest blessings of Almighty God, who has in the past so signally guarded it.

"WILLIAM PEPPER.

"UNIVERSITY OF PENNSYLVANIA,
"April 23, 1894."

PENNSYLVANIA STATE MEDICAL BOARD.

The Board have announced that the first examination for the right to practise medicine in the State of Pennsylvania will take place on June 11, 1894, the allopathic and homœopathic candidates being examined in Philadelphia, and the eclectics in Harrisburg. Any one possessing a certificate from the New York State Board will, upon its presentation to the Pennsylvania Board, receive a certificate to practise medicine and surgery in Pennsylvania.

NOTE TO CONTRIBUTORS.

Accepted manuscripts will be liberally compensated for, immediately upon publication; or reprints, if stated on the manuscript, will be furnished in lieu of such compensation. It is distinctly understood that all articles appearing as original matter are for our exclusive use, and are not to appear in any other publication excepting the Transactions of the society before which the paper may have been read. Illustrated articles are especially desired.

All matters of business, as well as subscriptions, should be sent to the International Medical Magazine Company, 716 Filbert Street, Philadelphia.

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ORIGINAL COMMUNICATIONS.

THE SURGICAL TREATMENT OF EMPYEMA.[1]

BY JOHN ASHHURST, JR., M.D.,

Barton Professor of Surgery and Professor of Clinical Surgery in the University of Pennsylvania; Surgeon to the Pennsylvania Hospital, etc.

I HAVE been invited to open the discussion on the subject of empyema, and I hope that the points which I shall present will serve to elicit the views of the Fellows present on those questions as to which a difference of opinion prevails, although I believe that surgeons generally are agreed on the main principles in the treatment of this serious affection. I have prepared a summary of my views on this subject, and the first proposition to which I shall ask your attention is that—

No operation is justifiable unless the presence of pus is certain; unless thorough treatment by medicinal agents, blisters, etc., has failed; or unless the symptoms, dyspnœa, etc., are so urgent as to demand immediate relief. My reason for maintaining that no operation is justifiable except under one of these conditions is, in the first place, the difficulty of diagnosis. Although I believe that the surgeon may say that probably there is pus in the pleural cavity rather than a serous effusion, yet in many cases I believe that it is impossible to be absolutely certain. It is true that the elder Pepper, an eminent diagnostician, maintained that bulging in the lower intercostal spaces indicated the presence of pus, and others have claimed that distention of the superficial veins, and certain signs obtained by percussion and auscultation, indicated empyema; but I think that all the information that we can gain points simply to a probability. Therefore the difficulty of diagnosis

[1] Report of a verbal communication made to the American Surgical Association, May 29, 1894.

makes me hesitate to recommend any operation unless the symptoms are urgent, or previous careful and judicious treatment has failed.

The reason that I object to operation except under these circumstances is, that, even with our improved methods of tapping by means of the aspirator, which is only a modification of the suction-trocar of Dr. Wyman and Dr. Bowditch, and even with antiseptic precautions, there is risk of converting a serous into a purulent effusion. A good many years ago, before the use of antiseptic measures was practised, it was my experience that while the first tapping showed serous fluid, the second almost invariably gave rise to the discharge of pus. I mentioned this to Dr. J. M. Da Costa, and he said that he had made precisely the same observation. This danger is not so prominent now, yet there is a possibility that it may occur. This is one reason why I do not recommend even the simple operation of tapping unless clear indications exist.

I can, however, very well recall cases in which life was sacrificed for want of tapping, and which had we known as much as we do at the present time could have been saved. I recall at least three cases, one in military and two in civil practice, in which patients died with enormous accumulations, serous or purulent, in the pleural cavity, and in which aspiration or tapping would have prolonged life if it had not saved it. The operation was one with which we were not familiar at that time except by reading, and in Philadelphia hospitals it was an operation quite unheard of.

My second proposition is, that the first operation should consist of simple aspiration with antiseptic precautions. My reason for this is that in case a mistake in diagnosis has been made, and as I hold the most skilful surgeon or the best diagnostician can only say that pus is probably present, there is undoubtedly less risk from the introduction of an aspirator needle than from a free incision into the pleural cavity. Nor do I think that there is any advantage in the use of the exploring needle or the hypodermic syringe, which are sometimes employed by physicians as affording a supposed simpler and safer means of diagnosis than the aspirator. I do not believe that there is any less danger in the use of the exploring needle and the hypodermic syringe than in the use of the aspirating needle. I think that the aspirator is in every way better, as enabling the surgeon, as soon as the diagnosis is confirmed, to relieve the patient by prompt evacuation. If the diagnosis is mistaken, no more harm is done than with the exploring needle.

With regard to the point at which the aspirating needle should be introduced, my own practice is to tap in the sixth or seventh intercostal space. Dr. Bowditch, whose experience with the suction-trocar in this affection was enormous, preferred to tap in the ninth interspace. Others have gone as high as the fourth interspace. The objection to the high operation is, that the pus is not so thoroughly evacuated, and the objection to the low operation is the danger of coming in contact with the diaphragm; and even if no injury is done to it, it interferes with the evacuation of the contents of the chest, for the diaphragm rises as soon as the tension in the

chest is diminished. On the whole, therefore, I think that the sixth or seventh interspace is the best point at which to tap. The line of the attachment of the serratus muscle is the one which I prefer, as the chest-walls are thin at this point, and at the same time it is sufficiently far back for free drainage if it is considered advisable to establish a drain.

My third proposition is, that when the fluid has partially reaccumulated, as it almost certainly will do if purulent, incision and drainage should be practised. If the fluid should turn out to be simply serous there is a probability that there will be no reaccumulation. If it is purulent, almost invariably the pus will re-form and the chest cavity will refill in a short space of time, and I then think that incision and drainage should be resorted to. This is better than repeated tapping, which, according to my experience, simply exhausts the patient by a slow process without giving much prospect of permanent relief. By incision and drainage a cure in the large majority of cases can be accomplished.

Then I believe, in the fourth place, that drainage is best effected by making two openings, one at the lowest available point, and carrying a large drainage-tube through the cavity from one opening to the other. The use of through drainage in this manner is, I think, more satisfactory than the employment of a single tube. I have seen a great many cases tapped by practitioners and a drainage-tube introduced, usually a very small and short tube, the effect of which has been to keep up a constant dribbling of pus from the chest without at any time evacuating the cavity. I believe that it is a great deal better to make through drainage and use a large drainage-tube, which allows the pus to be thoroughly evacuated, and permits air to enter and assist in the evacuation. Occasionally in order to introduce a drainage-tube of the proper size it may be necessary to notch the rib or remove a portion of one rib. Usually, however, unless in very young children, there is sufficient space to accommodate a large tube, so that I think that interference with the rib is not ordinarily necessary.

I am well aware that surgeons of eminence will dispute the view that through drainage is the best mode of treatment. Dr. Cabot, of Boston, has adopted the plan of making valvular drainage by means of a dressing of gauze and mackintosh over two short tubes introduced side by side, so that with expiration pus will escape, and that during inspiration the valve will close the opening and air will not enter. Dr. Phelps and Dr. Williams have employed tubes with valves to permit of washing out the cavity and to keep air from entering. I do not doubt that excellent results are obtained by these methods, but my preference is for through drainage. I understand that even in Boston Dr. Cabot's plan has not been generally adopted, and that many Boston surgeons employ the double opening.

Dr. Beck, of New York, has published an interesting and elaborate paper recommending that in all cases a portion of one rib should be excised in order to enable the surgeon to explore the cavity with the finger, and to feel for lumps of fibrinous material which are to be removed. He

considers this an important part of the treatment. His statistics are very encouraging and his mortality has been a small one. He also uses a valvular dressing, and stitches the skin and pleura together, performing what he calls a pleurostomy, a term which I think not a good one, believing that the derivatives of στόμα should be reserved for operations designed to establish an opening for the introduction of food. He establishes permanent drainage, but does not introduce a tube at the time of operation, believing that he thus lessens the risk of hemorrhage. The tube is placed in the wound after three days.

Another plan, which is recommended by Bülau, consists in the introduction of a long tube which extends to a bottle containing an antiseptic fluid, so that there may be continuous drainage into the bottle.

Other surgeons have gone farther than I have done and have recommended that air should be forced to enter. Parker and others introduce carbolized air. A similar plan has been recommended by Ewart under the name of perflation. A method which has been employed to assist in the expansion of the lung is to have the patient blow forcibly into a bottle or other closed chamber, so that the air not being able to enter the bottle may by reflex force be driven backward and cause inflation of the lung. I believe that this method is of advantage, particularly in children.

The fifth proposition is, that drainage should be supplemented by washing out the cavity with mild antiseptic fluids. When the lung has expanded and discharge has nearly ceased the tube should be shortened, the upper opening being allowed to heal and the tube being then gradually withdrawn through the lower opening.

Before passing to the consideration of this point I will say a word as to the plan which I have adopted for the introduction of the drainage-tube to establish through drainage. I make the incision usually at the point of the previous tapping, and then introduce an ordinary vesical staff, turning its beak downward, and making pressure against a point of the chest-wall as low down as can be reached. In cases of encysted empyema where the collection has been in the upper part of the chest, I have been obliged to deviate from this rule and make the counter-opening at a higher point, but usually it should be made pretty close to the diaphragm. The beak of the staff is made prominent in an intercostal space, and is cut down upon and made to protrude. An eyed probe is then carried along the groove of the staff and the drainage-tube introduced.

I now pass to the consideration of the fifth proposition. I think the supplementing of the drainage by washing out of the cavity is an advantage. Some surgeons consider this inadvisable and rely upon the valvular dressing to prevent the access of air and permit the escape of pus. The material which I have used is a mild boracic-acid solution. Dr. Cabot washes out the cavity with chlorinated soda. Dr. Beck washes out the cavity at the time of operation but not subsequently. When the lung has begun to expand I think it desirable that the tube should be shortened,

sometimes preceding this by the introduction of a tube of smaller size, still keeping up through drainage until the discharge is reduced to a minimum. Then the tube may be gradually shortened from below until there is nothing left but a superficial sinus, which will readily heal when the tube is finally removed.

The sixth proposition is, that, when the lung is so bound down by adhesions that it cannot expand, resection of one or more ribs should be practised (Estlander's operation, so called), in order to allow collapse of the chest-wall and to promote healing by bringing the costal and visceral layers of the pleura into contact. The more extensive operations of Schede and Tillmans, while probably justifiable in exceptional cases, are not to be recommended for general employment.

I call this operation of resection of the ribs Estlander's operation, and I have always maintained that it is a proper rule in surgery, that the credit of a discovery or invention should be given to the man who makes it practically useful. Estlander has made this a practical operation, and therefore I think that it is proper that he should have the credit of it. At the same time it interests us as American surgeons to know that the operation was done many years before Estlander suggested it by Dr. Warren Stone, of New Orleans. The operation has also been done by others, but to Estlander belongs the credit of having established its place in surgery.

This operation seems to me to be desirable where the lung is so firmly bound down that it cannot expand, and where the effect of drainage is simply to substitute a cavity containing air, a suppurating pneumothorax, for a pyothorax. In these cases it seems well to remove a portion of the ribs and allow the chest-wall to collapse. This is simply an illustration of the old proverb, "If the mountain will not come to Mahomet, Mahomet must go to the mountain."

It has been recommended as a substitute for this operation that the ribs should be divided in two places and the separated segment of the chest-wall pressed inwards, making what might be called by analogy with similar operations in other parts of the body an osteoplastic resection. I do not see any advantage in this method, and I think that there might be some risk of necrosis. It is surprising how much of the chest-wall may be removed and yet the patient retain a firm thorax. The gap is reduced to a very small space in a comparatively short time. Two ribs at least, and usually three or four, are resected, the extent of removal varying up to three or four inches. Every case must be judged by itself, the rule being to remove enough of the bony wall of the chest to permit the parietes to collapse and come in contact with the lung, and thus obtain a cure.

Schede has resected all the tissues of the wall, bringing the skin and superficial fascia in contact with the pleura. This is a more extensive operation and does not seem to me well fitted for general use. In some cases, however, the pleura will be so thickened that the best hope of recovery will be in resecting it as well as the ribs, and in such cases Schede's

method may have advantages. Tillmans has supplemented Estlander's operation by curetting the pleural sac after removal of the ribs.

As regards the technique of Estlander's operation, it is really a simple procedure. The flap is best made in the form of a horse-shoe, and is turned up in such a manner that when replaced there will be ample drainage of the external wound as well as of the pleural cavity. Having turned up the flap and controlled the bleeding, one of the interspaces is opened and the rib removed. The ribs may be severed by cutting forceps or by the saw. I see no objection to the use of the saw, for the pleura is so altered as the result of inflammation that with care it is not likely to be injured, and I find the saw very convenient. At first glance it might seem that there would be risk of hemorrhage from the intercostal arteries, but as a matter of fact there is little bleeding, as these vessels are generally occluded by clotting a long time before it is proper to resort to this operation. Resecting four ribs in two places, and thus cutting the arteries in eight places, it is not usual to have more than one intercostal bleed. There is no difficulty in applying a ligature in the ordinary manner, if necessary. Dr. Beck has recommended the use of a special instrument to push off the periosteum and thus avoid injury to the artery, but where the operation is resorted to in cases of long standing there is no trouble to be expected from hemorrhage, and no special precaution of this kind is needed.

These extensive operations on the chest are, I think, not called for in children. In children the chest-wall is flexible and the lung readily expands, so that by evacuating the pus and thoroughly draining, a cure can be effected in the large majority of cases without removal of any portion of the ribs. In adults it is more necessary to interfere in this manner; and as far as my experience goes the operation is one for adults rather than for children.

The prognosis of Estlander's operation is on the whole favorable. I have not seen any bad results. While I do not participate in the glowing hopes of some surgeons, and do not believe that the operation will always effect an absolute cure, yet it adds much to the comfort of the patient. It is the difference between having a large abscess discharging a great quantity of pus and a small sinus which weeps a little thin fluid. If you do not succeed in obtaining complete obliteration, the discharge is reduced to a minimum and the patient is placed in a much more comfortable condition.

The unfavorable cases are usually those in which there is general tuberculosis; this is simply an illustration of the principle with which we are all familiar, that general tuberculosis interferes with the healing of wounds. Just as in an operation for fistula in ano, under such circumstances, we find that while the operation does no harm the tuberculosis prevents the wound from healing, so in these cases, where there is tuberculosis, the wound is slow to heal and we are apt to have a fistula remaining. In these cases a perfect result is not to be expected, but even here relief is given mechanically by the discharge of pus, and the operation is therefore justifiable.

Another unfavorable complication is a communication between the empyema and a bronchus. We cannot then succeed in evacuating the fluid as satisfactorily as when this complication does not exist. The statistics of operations for empyema show a remarkable uniformity. Dr. Beck has reported one hundred and forty-one cases in his own practice, of which he has traced the termination in one hundred and seventeen. Of this number twelve have died, giving a mortality of about ten per cent. With this exception the experience of surgeons generally and the figures of those who have collected a large number of cases show that the death-rate has varied between twenty and thirty per cent. The most extensive statistics of paracentesis are those of Evans, five hundred and twenty-six cases with one hundred and fifty-three deaths, giving a mortality of twenty-nine per cent. Death, however, is not attributable to the operation in many cases, only two deaths of the one hundred and fifty-three having been due to the surgical interference. That is the experience of operators generally. Even if the operation for empyema does not effect a cure it does not make the patient worse. In the large majority of cases operations give great relief, and in a certain proportion, particularly in the young, they give a perfect cure. The worst that can be said about them is that they do not always save life; very rarely do they cause death.

In conclusion, I will say that I think that pleural effusion and empyema as they come under the hands of the surgeon are graver affections than as they come under the observation of the physician. The prognosis is more favorable where the effusion is the result of simple pleurisy than where it is caused by injuries or penetrating wounds of the chest.

These are the points that have seemed to me to best admit of discussion, and I venture to submit them to the Association for consideration.

A CASE OF ACROMEGALY, WITH REMARKS ON THE PATHOLOGY OF THE DISEASE.[1]

BY HOWELL T. PERSHING, M.Sc., M.D.,

Professor of Nervous and Mental Diseases in the University of Denver.

Mrs. A. B., aged forty-two, came to Denver in May, 1893, to consult Dr. John Chase about her failing vision, and was referred to me for neurological examination and treatment.

Her father is in perfect health, aged seventy; his parents both survived the eighty-fifth year, and his brothers and sisters show no hereditary taint.

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[1] Contributed to the Annual Meeting of the American Neurological Association, May, 1894.

Her mother died at fifty-four, and her mother's mother at seventy-one, both of consumption. The maternal grandfather and maternal aunts and uncles have been healthy and long-lived.

The patient first menstruated at fifteen. Menstruation was generally profuse and painful; otherwise she was perfectly well until twenty-eight years of age, when her only child was born. This child, who is now quite well, was weaned soon after his birth. Menstruation returned seven months after the weaning, but was then scant and irregular, disappearing finally when the patient was thirty.

Soon after parturition pain and cramping sensations in the right leg and toes became annoying. About the time menstruation ceased a decided lack of endurance was noticed, and severe headaches began to occur, the pain being at the vertex or just back of the eyes, mostly steady but sometimes of a shooting character. At times the patient felt as though the blood were rushing to her head and crowding the eyes out of their sockets. There has been much suffering from headache ever since.

Before this she had been very slender, her waist measure being twenty-one inches, and her weight only ninety-eight pounds. Now a decided enlargement of the abdomen with increase of weight was noticed. At the age of thirty-two she began to have shooting pains in the hands, and the joints of the fingers were enlarged. She could no longer button her clothing. This was supposed to be "rheumatic gout," but it soon became evident that the entire hand was growing larger. The size of gloves increased from No. $6\frac{1}{4}$ to No. $8\frac{1}{2}$. The feet were increasing in size at the same time, and No. 5 shoes were required instead of No. 3, which was formerly the proper size.

When about thirty-two years of age vision began to fail in the right eye, and this eye has since become totally blind. One-half of the field was lost before the other. On first telling of this the patient was very positive that the right (temporal) half of the field was the first to disappear, indicating with her hand the blind and the good sides as she recalled how things appeared to that eye. Afterwards she was not so sure as to which side first grew dark, but I believe her first account to be correct. The left eye, which now shows distinct temporal hemianopsia, was not noticeably defective until March, 1892. Whether its temporal field disappeared before or after the loss of the nasal field of the right eye cannot be ascertained from the history. Soon after the defect in vision was first noticed there began to be a roaring in the ears, synchronous with the pulse, and this sound has persisted more or less ever since.

When she was thirty-five years old the gums began to recede from the teeth. Three years later, on account of pain in the jaws, fifteen teeth were extracted. Only two were left, and as the pain continued these were also removed, but without benefit. It was now apparent that the lower jaw projected beyond the upper one.

For the past five or six years there have been attacks of palpitation of



FIG. 1.—Mrs. A. B., aged twenty years, showing normal appearance of the patient.



FIG. 2.—Same patient, aged forty-two years, affected with acromegaly.

the heart with dyspnœa; of late they have somewhat abated. At times there has been very profuse sweating.

Condition, May, 1893. The patient is five feet, five inches in height, and weighs one hundred and forty pounds. Her general appearance is very striking, suggesting acromegaly at the first glance. The face is long and massive. The eyeballs are prominent, and the lids large and puffy. The nose is very long and its lower part much enlarged. The lips are thick, with the aperture of the mouth wide, while the lower jaw is much too long for the upper.

The hands, while not much elongated, are decidedly thicker and broader than normal, the fingers having the characteristic "sausage shape." The feet are also broad and thick, but not so large in proportion as the hands.

The neck is somewhat bent forward. The larynx is not prominent. The thyroid gland can barely be felt; it seems smaller than normal. Speech is slow and drawling, with the voice rather high pitched.

The clavicles at their sternal ends are enlarged. The scapulæ show nothing abnormal. The sternum is long and broad; its manubrium appears to be dislocated backward. The pelvis, judging from external measurements, is flattened in its antero-posterior diameter, but is otherwise normal. There is no marked abnormality of the lower limbs except the size of the feet.

The skin and nails are normal. Sweating was formerly very profuse, but is not so now. The hair of the head is abundant and has grown thicker during the progress of the disease; on the other hand, hair has almost entirely disappeared from the pubes and axillæ. There are no glandular enlargements.

The pulse ranges from seventy to ninety-six; it is regular though small. The first heart sound is soft; otherwise the sounds are normal. On percussion cardiac dulness is normal and there is no dulness over the sternum. The temperature, taken on two occasions, was 97.8° F. There are periods of excessive thirst. Appetite and digestion are good, except for obstinate constipation. Judging by percussion-dulness the liver is small, while the spleen is of normal size.

The urine contains no albumin or sugar.

Muscular power is diminished in the lower limbs generally; in the arms it is fair, considering the general condition. There is no facial paralysis, and the tongue, which is very large, is protruded in the median line. The plantar reflex is present and the knee-jerk and Achillis-jerk are exaggerated on both sides. There is slight but distinct ankle clonus on the left side and a trace of clonus on the right.

Sensibility to touch, pain, and temperature is retained throughout the body. There is an excessive sensibility to cold, and the patient complains of coldness of the ears. Taste and smell are good. Hearing is nearly normal, though slightly impaired in the right ear. Tinnitus is annoying.

The right eye is totally blind. Vision in the left is so impaired that

the patient can no longer read, although she can see enough to avoid objects in moving about the room. The outer side of the visual field is blind, the line of demarcation between it and the inner side being sharply defined.

The pupils are equal, and both react to light falling on the left eye. There is no paralysis of the extra-ocular muscles, but the right eye wanders out from lack of fixation. The left optic disk is in a condition of advanced atrophy; the right disk is still more atrophic, the largest vessels being mere threads. There is lachrymation during the attacks of pain back of the eyes. The lids are puffed but not œdematous.

The mental condition appears somewhat dulled, and the patient is at times rather irritable; but there is no marked defect of memory, and, on the whole, she bears her pain and faces the hopelessness of her miserable situation remarkably well.

MEASUREMENTS.

	Centimetres.
Skull:	
Circumference	58
Binauricular arc	37.8
Naso-occipital arc	36.5
Naso-bregmatic arc	14.3
Antero-posterior diameter	19.5
Transverse diameter	14.8
Glabella to chin	14
Glabella to margin of hair	7
Upper incisors to occipital protuberance	19.5
Upper incisors to bregma	20.2
Bregma to occipital protuberance	16.8
Empirical height of cranium	15.5
Length of nose	6
Width of mouth	6
Alveolar border of lower jaw to tip of chin	3.6
Temporo-maxillary articulation to tip of chin	13.6
Angle of jaw to tip of chin	11
Between angles of jaw	10.6
Cephalic index, 75.9.	
Limbs, right side:	
Acromion to olecranon	29
Olecranon to styloid of ulna	25.5
Around condyles of humerus	21
Around wrist	18
Around metacarpo-phalangeal articulations	21.2
End of radius to tip of middle finger	18
Breadth of hand	9.6
Circumference of arm	25
Circumference of forearm	21.6
Crest of ilium to head of fibula	56.5
Head of fibula to external malleolus	36
Circumference of thigh	42
Circumference of knee	35.5
Patella	7x7
Circumference of calf	27

	Centimetres.
Limbs, right side:	
Around malleoli	22.8
Around heel and instep	30
Around metatarso-phalangeal joints	23.5
Length of foot	24
Width of foot	8.8
Length of great toe	7
(The left limbs are slightly smaller than the right.)	
Trunk:	
Circumference of chest on deep expiration	79
Circumference of chest on full inspiration	86.5
Length of sternum	18
Circumference of neck	35
Between iliac crests	29
Between iliac spines	26.7
External conjugate of pelvis	17

Although the patient was able to come to my office on the day of her arrival in Denver, the necessary effort, following her journey, exhausted her very much, and she afterwards remained in her room, most of the time in bed, until she returned home at the end of a month. The treatment consisted in the administration of codeine, cannabis, and acetanilid, with an occasional injection of morphine, to relieve the severe pain in the head. One evening there was a very rapid failure of what vision remained, so that in a few minutes she was almost totally blind. The ophthalmoscope showed no change in the vessels or nerve-head, and by the next day vision was restored to about what it had been before. In June, 1893, she returned to her home in a distant town. In September her husband reported profuse sweating and loss of control of the bladder, but with less pain. At this time, following the example of Putnam,[1] thyroid extract was ordered, but it was too late to fairly test any remedy. In October pain was again very severe in the head and lower limbs; she could no longer stand, and there was no control over the bladder or rectum. Early in November coma gradually came on and ended in death. I did not know of this termination until it was far too late to make any arrangements for an autopsy.

That this is a genuine case of acromegaly there can be no question. The gradual enlargement of the hands, feet, nose, jaw, and tongue occurs in no other disease. When the patient entered my office I had just been looking at the pictures of one of Marie's cases of acromegaly, and, as will be readily understood from her photograph, the diagnosis was made in an instant.

Without attempting a thorough discussion of the pathology of the disease, I will call attention to some interesting features of this case.

As in Marie's cases, there is an absence of any apparent hereditary predisposition to the disease. Its duration can be accurately fixed as fourteen

[1] Transactions of the Association of American Physicians, 1893.

years. But this case is interesting mainly because it adds another to the constantly-growing list of those which confirm Marie's original belief that disease of the pituitary body is the cause of acromegaly.

The headache, the optic nerve-atrophy with consequent loss of vision, the tinnitus, the paraplegia, and the loss of control of the sphincters, all taken together, can be explained only as the local effects of a growth in the region of the pituitary. Such a growth, pressing first on the inner fibres of the optic tracts, would cause blindness of the nasal half of each retina,—that is, of the temporal half of each visual field. It will be remembered that temporal hemianopsia of the right eye was first noticed, and that at the time of examination there was distinct left temporal hemianopsia with complete blindness of the right eye. The loss of the right nasal field was of course due to the additional destruction of the outer fibres of the right tract, and a similar destruction of the left tract was evidently going on while the patient was under observation. Such a growth, lying between the internal carotid arteries and pressing on either of them, would cause the rhythmical tinnitus noted. Bilateral pressure on the motor tracts in the crura accounts for the paraplegia and also for the loss of control over the bladder and rectum.

The local diagnosis, then, is clear enough; it is only in regarding the disease of the pituitary body as the cause of the characteristic trophic changes in the limbs and face that one may be accused of going beyond the evidence. Here it should be noted that any antecedent improbability of disease of an organ apparently so insignificant causing such widespread disturbance has been removed by the abundant proof that destruction of the thyroid gland does cause myxœdema. Not only is the clinical resemblance between these diseases so close that acromegaly has been described as myxœdema, but there is also an obvious pathological relation, which should lead us to expect a similarity of causes.

The resemblance between the pituitary body and the thyroid gland is also exceedingly close. Measured by their long line of descent, both are most aristocratic organs. The mammalian kidney, for example, is but a new-comer in comparison. The most primitive vertebrates known have the beginnings of the thyroid and pituitary; and in an animal as low as the lamprey, without limbs or jaws, these glands are well developed.

The pituitary, like the thyroid, starts as a pouch from the wall of th oral cavity, but, growing dorsad, it has been caught between the ossifying centres at the base of the skull, and so is included within the cranium. Before its relation to acromegaly gave it an unexpected importance in pathology, its glandular tubules, lined with active epithelium and filled with colloid matter like the thyroid follicles, and its abundant blood-supply, led comparative anatomists to the conclusion that it must have some important function.

According to the recent researches of Andriezen[1] it originally poured its

[1] British Medical Journal, January 13, 1894.

secretion into the current of a water-vascular system, which, beginning at the mouth, irrigated the cerebral ventricles and central spinal canal of the earliest vertebrates. The main function of this system must have been respiratory, but the pituitary gland probably furnished some substance necessary for the proper nutrition of the nerve-tissue, which it now furnishes less directly through the blood and lymph.

Briefly stated, the evidence for the belief that acromegaly is caused by interference with the function of the pituitary body is as follows: Of eighteen autopsies in supposed cases of acromegaly the gland was found to be destroyed or diseased in fifteen,[1] while in a very large proportion of other cases there were localizing symptoms distinctly showing that it was involved. Those who do not accept this theory regard the frequent involvement of the pituitary as simply one of the consequences of the disease. They claim in the first place that the gland has been found to be normal in genuine acromegaly.

This claim is supported by three of the autopsies mentioned, and in two of the cases the eminence of the reporters gives especial weight to their evidence. The first is that of one of the Hagner brothers studied during life by Friedreich and Erb, and after death by Arnold, in which both pituitary and thyroid were normal. This case commonly passes as one of acromegaly, and Marie, who first described and named the disease, originally regarded it as one. Nevertheless, after learning all the facts of the case, Marie[2] is decidedly of the opinion that it was not one of genuine acromegaly, because the jaw, nose, lips, tongue, and xiphoid process were not enlarged, the neck was slender, the kyphosis was lumbo-dorsal instead of cervico-dorsal, and the enlarged extremities were not of the shape characteristic of acromegaly. The second case is that of the patient Mennig, studied during life by Fraentzel, and after death by Virchow. Here the pituitary was normal, except for a slight enlargement scarcely worth mentioning, and the thyroid was also normal. Marie, however, in his paper in *Brain*, July, 1889, said that this case was probably not one of acromegaly, and he and his followers now class both this and the Hagner case as examples of the disease which he has discovered and called hypertrophic osteo-arthropathy of pulmonary origin.

A third case in which pituitary and thyroid were normal has been reported by Sarbo.[3] Here there was no history, but the patient was both

[1] The cases in which the pituitary body was found to be destroyed or diseased are those of Brigidi, Henrot, Thomson, Klebs, Broca, Holsti, Bury, Gonzalez-Cepeda, Caton and Paul, Marie and Marinesco, Duchesneau, Gautier, Dana, Squance, and Bonardi. It was normal in the cases of Fraentzel, Friedreich and Erb, and Sarbo. See Osborne, Reference Hand-Book of the Medical Sciences, supplement, 1893, also Collins, Journal of Nervous and Mental Disease, December, 1892, January and February, 1893.

[2] Brain, July, 1889.

[3] Abstracted by Joseph Collins, Journal of Nervous and Mental Disease, January, 1893.

tubercular and syphilitic. The jaw, nose, and lips do not appear to have been enlarged; the face was broad, not long. The ears were large, the skull was thickened, and the hands and feet were enormous. A true osteitis was found. As far as can be judged from the only description of this case accessible to me, it was not one of acromegaly; the features are rather those of hypertrophic osteo-arthropathy of pulmonary origin.

It seems then that the pituitary body has not been found normal in any case of undoubted acromegaly that has so far been published. Still, it is said that destruction of the pituitary body by tumors does not cause acromegaly.

Here it should be noted that extreme care would in any case be necessary to determine whether so small an organ were completely destroyed. A very minute portion of the thyroid, if left by operation or disease, will prevent the development of myxœdema, and a proportionate amount of the pituitary might easily escape detection. Dercum's[1] citation of Weir Mitchell's[2] case, in which an aneurism apparently destroyed everything in the region of the pituitary, seems open to this objection. There is nothing in the notes of the autopsy to show that remnants of the pituitary were sought or that acromegaly was thought of at that time. Moreover, it is not true that tumors of the pituitary body never cause acromegaly. In Henrot's case there was a pituitary tumor of some kind. In Bury's case there was a glioma excavating the sella turcica, and a similar growth was found in Caton's case, recently reported. Now a glioma cannot be regarded as an effect of acromegaly, nor can these cases be readily disposed of as coincidences. Under all the circumstances it seems rational to regard the destruction of the pituitary body as the cause of the trophic symptoms.

It does not follow, however, that destruction of the pituitary must always cause acromegaly. Extirpation of the thyroid causes increased growth of the pituitary,[3] and in several cases of disease of the thyroid associated with myxœdema or cretinism the pituitary has been found enlarged.[4] Conversely, Vassale and Sacchi claim to have shown that the thyroid enlarges after removal of the pituitary.[5] If these kindred glands are so correlated that one may assist the other, additional work on the part of the thyroid might well be sufficient to prevent acromegaly in one case and not in another. The frequency of thyroid disease in acromegaly and the fact that Putnam has obtained marked improvement in such cases from thyroid extract give support to this hypothesis.

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[1] American Journal of the Medical Sciences, March, 1893.

[2] Journal of Nervous and Mental Disease, January, 1889.

[3] Rogowitsch, Arch. d. Phys., 1888, ii. 433; Beitr. z. Path. Anat., Ziegler, 1888, iv.; Stieda, Dissertation, Königsberg, both cited by Putnam, Trans. Assoc. American Physicians, 1893.

[4] Hofmeister, Fortschritte der Medicin, 1892, cited by Putnam, loc. cit.; Collins, Journal of Nervous and Mental Disease, February, 1893.

[5] Putnam, loc. cit.

It appears, at present, that the most hopeful treatment of acromegaly is the administration of pituitary bodies from the lower animals. I am very sorry it was not tried in the case here reported.

TINCTURA FERRI CHLORIDI IN TYPHOID FEVER.

BY W. F. McNUTT, M.D., M.R.C.S. Ed.,

Professor of the Principles and Practice of Medicine, University of California.

MANY and various are the remedies that have been and are being used in the treatment of typhoid fever. It is not my intention to discuss the hygienic and antipyretic treatment of this affection. I use the tincture of iron for the gastro-intestinal condition, for its surface intestinal antipyretic action. It might be well to say, however, that antipyretics are used much too freely in typhoid, and greatly to the detriment of the patient. Too many practitioners are governed in the treatment by the thermometer. Better not use the thermometer at all in typhoid than to be steadily and surely beating the life out of the patient in vain efforts to break down the fever.

Typhoid fever is not a frequent disease in San Francisco, and consequently the number of cases that one is called upon to treat is not large; still, scarcely a year passes but every physician in San Francisco who has a large family practice meets with a few cases. In the course of twenty-five years, I have had an opportunity of trying all the so-called gastro-intestinal remedies, such as turpentine, bismuth, salicylic and mineral acids, nitrate of silver, iodoform, copper, zinc, etc. For the past four years I have been in the habit of administering tinctura ferri chloridi in glycerin and water, in nearly all my cases of typhoid fever, ten to thirty drops every two to four hours.

My practice has been to commence the administration of iron as soon as positive indications of typhoid are recognized. The result of my experience is that the tincture of iron is the most reliable of all gastro-intestinal remedies, and much more efficient than the muriatic acid without the iron. It certainly exerts a beneficial influence on the mucous membrane by its astringent and tonic properties, limiting the hyperæmia, and consequently the exudations and tendency to ulceration and to hemorrhage. Besides the beneficial influences of tincture of iron on the mucous membrane of the digestive tract, it certainly has a sustaining influence, by acting as a blood food in preventing waste of tissue, when there is very considerable diarrhœa or dry brown tongue,—which is not often the case when the iron is given pretty freely.

I often add the one-fiftieth or one-hundredth of a grain of bichloride

of mercury to each dose, and, when the gastric symptoms are prominent, liquor acidi arseniosi, one or two drops, sometimes adding both with benefit.

During the past summer quite a severe epidemic of typhoid fever visited Oakland, and at my suggestion some of the physicians adopted the iron treatment with the most satisfactory results.

THE COMPENSATORY CHANGES IN THE RIGHT VENTRICLE IN MITRAL STENOSIS. A CASE WITH HYPERTROPHY, BUT WITHOUT DILATATION; DEATH FROM HÆMOPTYSIS.[1]

BY ALEXANDER McPHEDRAN, M.B.,

Associate Professor of Medicine, University of Toronto; Physician to the Toronto General and St. Michael's Hospitals, and the Victoria Hospital for Sick Children.

J. K. C., aged thirty-five years, financial manager of a large printing business. As a lad he was not very robust, but was never seriously ill. There is a probable history of rheumatism; no chorea. As he grew to manhood he became anxious about his health; had the morbid sensitiveness so often occurring with bad digestion. He cultivated art and literature. He took careful and systematic physical training, being especially fond of fencing, at which he was an expert, and indulged regularly in the exercise, but always with careful moderation. He had a splendidly developed chest. He first came to me for advice in July, 1889. Some years prior to that time he had become aware that he had organic disease of the heart, probably in seeking advice for pain in the lower præcordial region caused by imperfect digestion. This discovery caused him much mental worry, and he sought advice in many quarters, —from all sorts of men, from the most eminent physician down to the most nefarious quack.

In July, 1889, there were well-defined symptoms of stenosis of the mitral orifice; a loud, harsh, presystolic murmur; synchronously a fairly marked thrill; no displacement of the apex impulse; no signs of enlargement of either left or right ventricle. There were no respiratory symptoms or complaint of shortness of breath, unless undue exertion was made. The digestion was very bad, there being much flatulence and constipation. He was greatly depressed mentally, attributing his ill health to the heart-disease. He was assured that the heart was, for the present, blameless,— that the cause lay with the digestion,—and appropriate treatment was prescribed. He was advised to continue regular fencing and other exercise in moderation. This he was able to do for over a year.

In January, 1891, he had a severe attack of influenza, with considerable bronchitis. In May following he had pneumonia badly, one lobe being involved at first, and a second lobe as he was convalescing. Throughout both these illnesses the heart stood the strain perfectly, the only untoward symptom being free hemorrhagic sputum

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[1] Read at the meeting of the Association of American Physicians, Washington, June 1, 1894.

in both the bronchial and pneumonic attacks. After a somewhat tedious convalescence he resumed business, and continued at it until 1893, with short and more frequently recurring interruptions from attacks of bronchitis, during which the sputum became increasingly hemorrhagic. The breathing became shorter, so that fencing and all physical exercise had to be abandoned.

During this time the præcordial thrill became more marked and the murmur louder and more harsh, and occupied the whole of the diastolic period; it was somewhat louder at the beginning than at the middle, but loudest at the end of the period. Both sounds were distinct at the apex and also some distance beyond it.

In the last week of February, 1893, he took cold, and had a sharp attack of bronchitis, with much cough and muco-hemorrhagic sputum. In ten days he went to the office for an hour, but the cough grew worse afterwards. He then remained at home, moving about the house. On Saturday, March 11, there was slight fever, and he was feeling very apprehensive as to the future. On Sunday evening he was somewhat better; but he expressed a determination to sit by an open fire all night. One hour later a fit of coughing came on, with profuse hemorrhage, and he expired in ten minutes.

At the autopsy the lungs were found very large and crepitant throughout; they contained many minute calcareous nodules, but no infarcts. The pulmonary artery was dilated and atheromatous to its smallest branches. The point of rupture occurred in the right lung, but could not be found. The right ventricle was contracted and empty, greatly hypertrophied; its tissues firm, forming the apex of the heart, and looked like a normal left ventricle; there was no dilatation. The left ventricle was considerably atrophied and its tissue dark and friable. The left auricle was greatly dilated. The mitral orifice, a slit-like opening, was one centimetre in the long diameter. The posterior segment was extremely calcareous. The valves were competent. Other organs were normal.

The noteworthy features in this case are the unusual duration and the massive hypertrophy and absence of dilatation of the right ventricle. We have no accurate data by which to determine the exact duration; but it must have been fifteen, and probably twenty years. Rosenstein[1] says that—

"Compensation is brought about by the right ventricle alone, and may suffice to sustain life endurably for years, and exceptionally for even more than ten years. But we must not forget that such cases are of an extremely exceptional order."

Then, such persistent compensation in mitral obstruction is extremely rare,—a compensation so powerful as actually to lead to a fatal termination. Had it begun to fail life might have been prolonged for some considerable time. The persistent competence of the heart led to a more favorable prognosis than was justified by the results.

Of Broadbent's[2] useful division of the history of these cases into three stages, Mr. C. did not reach the end of the first, in which the first and second sounds as well as the murmur are all heard at the apex and the second sound also to the left of the apex. In this stage, according to his experience, there are no symptoms,—that is, it is not till cardiac failure

[1] Ziemssen's Cyclopædia, vol. vi. p. 131.

[2] Harveian Lectures, Brit. Med. Journ., July, 1884, vol. i. p. 449.

sets in that symptoms show themselves; and cardiac failure occurred in all his cases.

The constant failure of the right ventricle in mitral stenosis is doubtless due to the recurrent attacks of rheumatism that occur in such cases. With these attacks of rheumatism there is always an accompanying anæmia that usually persists during the intervals between the rheumatic attacks and prevents the proper nutrition of the heart.

Then there is rarely any effort made to develop the heart to meet the altered conditions by systematically "training" the cardiac muscles. Most of the subjects of mitral stenosis are females; and no thought is given to their physical training, especially with a view to strengthening the heart. Mr. C.'s case well illustrates the benefits to be derived from persistent systematic physical training, as, no doubt, the complete compensation in his case was largely due to the exercise of fencing,—an exercise taken in loosely-fitting garments and in well-ventilated rooms. There can be no doubt that much good would be done in all cases by systematic, graduated exercise taken in the intervals between the attacks of endocarditis. Not only would the heart be strengthened, but the general health would also be improved, and the tendency to the recurrence of rheumatism lessened. There is probably no form of heart-disease that can be more beneficially influenced by "training" than mitral stenosis.

As to compensatory cardiac changes occurring in mitral stenosis there is a diversity of opinion among the authors of the various works on medicine, and, unfortunately, many of them are inaccurate. Thus Aitkin says the right ventricle is dilated and hypertrophied, and Niemeyer does so likewise. Flint[1] is not clear in his statement, in one place speaking of hypertrophy and dilatation, and a little further on of hypertrophy only of the right ventricle as compensating for the obstruction.

Strümpell[2] says:

"The right ventricle can, by more work, so increase the pressure in the pulmonary vessels that, in spite of the narrowed orifice, an approximately sufficient quantity of blood may pass into the left ventricle. Hence we find in mitral stenosis a very marked hypertrophy and dilatation of the right ventricle."

Loomis[3] is less definite, but thinks—

"That mitral stenosis admits of but slight compensation, . . . and that obstruction in the pulmonary circulation may lead in time to dilatation and hypertrophy of the right ventricle."

Shattuck[4] says:

"So it is in the right ventricle that compensatory increase in power must chiefly be sought. This portion of the heart is, therefore, dilated and hy-

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[1] Practice of Medicine.
[2] Text-book of Medicine, p. 285.
[3] System of Medicine, Pepper, vol. iii. p. 682; also Practice of Medicine, p. 489.
[4] Reference Handbook of the Medical Sciences, vol. iii. pp. 587, 588.

pertrophied, the wall at times acquiring a thickness equal to that belonging normally to the left ventricle and displacing the latter in the formation of the apex."

Osler[1] writes thus:

"Eventually the tension is increased in the pulmonary circulation, owing to the impeded outflow from the vein. To overcome this the right ventricle undergoes dilatation and hypertrophy, and upon this chamber falls the work of equalizing the circulation."

Pepper[2] says:

"Finally hypertrophy and dilatation of the right ventricle supervene, and seem to maintain the proper circulation. The right ventricle is never capable of as decided and persistent hypertrophy as is the left."

Lymann[3] writes:

"As a consequence of this condition the right ventricle becomes dilated and hypertrophied."

Thus it is seen that there is general agreement among American authors that the compensatory changes in the right ventricle consist in dilatation as well as hypertrophy. On the other hand, English authors, as a rule, regard the compensatory changes in the right ventricle in mitral diseases generally as consisting of hypertrophy only, and look upon dilatation as evidence of failing compensation.

Thus, Sir Walter Foster[4] says:

"In mitral lesions the left auricle is dilated as a primary consequence of the condition of the circulation; hypertrophy follows, but is insufficient to prevent increased fulness of the pulmonary veins. This impedes the circulation in the lungs, and increased tension in the pulmonary artery soon begets the necessary hypertrophy of the right ventricle."

Bramwell[5] says that—

"Compensation is partly due to hypertrophy and dilatation of the left auricle, but chiefly to secondary hypertrophy of the right ventricle. The systemic venous circulation may for a considerable time be protected by the hypertrophy of the right heart."

Wilks[6] is less clear; but refers to the well-known hypertrophy of the right ventricle, and of the right auricle also, in the pulmonary obstruction of chronic bronchitis, and says that in mitral stenosis a similar hypertrophy occurs in the right side of the heart.

Broadbent[7] speaks only of hypertrophy of the right ventricle in connection with the stage of compensation in mitral obstruction.

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[1] Practice of Medicine, p. 615.
[2] American Text-book of Medicine, vol. ii. p. 288.
[3] Practice of Medicine.
[4] Quain's Dictionary of Medicine, vol. i. p. 624.
[5] Diseases of the Heart, p. 481.
[6] Fagge's Principles and Practice of Medicine, 2d ed., vol. i. p. 956.
[7] Harveian Lectures, Brit. Med. Journ., 1885, vol. i.

Bristowe[1] agrees with the American authors referred to in describing the compensatory change as one of hypertrophy and dilatation of the right ventricle.

Stenosis of the mitral orifice is always a very chronic process, requiring years for it to contract sufficiently to cause material obstruction, so that the impediment to the pulmonary circulation is very slowly produced. In addition to this the pulmonary circulation is one of very low tension,—nearly as low as that of the portal circulation. Lichtheim[2] found that after ligaturing one pulmonary artery the same amount of blood continued to reach the left heart. It was only after about half the lung supplied by the remaining pulmonary artery was rendered bloodless by artificial emboli that the pressure in the aorta began to sink.

In view, then, of the low tension of the pulmonary circulation and the gradual development of the obstruction, the increased resistance offered to the right ventricle will develop so slowly that ample time will always be given the ventricular walls to hypertrophy to meet the increased labor devolving upon them. The only question in doubt is the degree of hypertrophy. This will probably depend chiefly on the general health of the sufferer. If, as frequently happens, he is subject to mild recurrent attacks of rheumatism, each increasing the thickening and contraction of the valves and at the same time maintaining a condition of anæmia and low vitality, the hypertrophy of the right ventricle will be hindered proportionally to the impairment of the health.

The maintenance of the health of these patients becomes, then, a question of the first importance. This, with judicious "training" of the heart muscles by systematic physical exercise, offers the most effective means at our command for prolonging life with the greatest degree of comfort and usefulness, and for warding off the dropsy that often renders the last days of these patients so miserable.

THE TREATMENT OF SALPINGO-OVARITIS.[3]

BY DR. AUVARD,

Accoucheur to Paris Hospitals; Editor of the Paris Review of Gynæcology, etc., Paris.

THE medical treatment of certain cases of subacute and chronic salpingo-ovaritis by the distention of the vagina by tamponning has given me very satisfactory results.

It is applied as follows: The patient is placed in position on a surgical

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[1] The Theory and Practice of Medicine, p. 502.

[2] Die Storüngen des Lungenkreislaufs, Berlin, 1876; Brit. Med. Journ., 1894, vol. i. p. 515.

[3] Translated by Dr. Thomas Linn.

chair or table and the vulva and vagina are washed out with proper antiseptic solutions. A Cusco speculum is then introduced, into which about a tablespoonful of glycerin is poured with a little iodoform, to prevent any decomposition; then with a pair of pincers a tampon as large as a walnut, made of cotton firmly pressed together, is introduced; this is passed into the posterior *cul-de-sac* of the vagina. The lateral *culs-de-sac* are then tamponned in the same manner and thoroughly distended, and lastly a tampon is placed in the anterior *cul-de-sac*. Thus the os uteri is entirely surrounded by tampons, each saturated with the glycerin and iodoform which have been poured into the speculum. These tampons should remain in place for two or three days, and then should be taken out by the physician in attendance, say every Monday, Wednesday, and Saturday, or they could be removed Tuesdays and Fridays. When removed regularly every few days, they have a slight odor of fermentation if no iodoform has been used, but this does not seem to have any bad effect on the health of the patients. These tampons are to remain some time in place and to be renewed, as stated above, from time to time. They will not interfere with micturition, nor defecation, nor do they entirely prevent coition. This occurrence would not be a fault, however, as it would only allow of a rest that would be useful in the treatment, and would not be carried out otherwise than by this somewhat forced method of abstention.

It might be well in some cases to insist upon a certain amount of repose during this treatment, but this is not absolutely necessary. Laxatives and tonic medication can also be given at the same time, and humid compresses on the abdomen can be used to advantage.

With this treatment cures and considerable improvement in cases that seemed doomed to surgical interference have been obtained. The following is a case in point:

Mrs. N., thirty-seven years of age, came to the clinic February 25, 1892. She presented the following symptoms: pain in the lumbar region, in the lower abdomen and left iliac region, with radiation down the thighs; these pains were increased during menstruation.

The patient had had five confinements, all of them normal, and two abortions, the last of which took place during the fifth month of pregnancy and four years ago. The pains date from this time, as she then commenced with a metritis that was accompanied with a great loss of blood. She was ill for some six weeks.

At the time she came to us she suffered a great deal, although her general state was not bad, except a little constipation and a marked increase in the size of the abdomen; her menstruation was regular and she had no leucorrhœa.

The local examination gave the following results: vulva normal but gaping; by vaginal touch and combined abdominal palpation, I found a uterus of large size that was slightly in anteversion and painful to the double palpation; the annexed parts seemed normal; the os was increased in size and a transversal tear was felt which allowed the finger to penetrate into the cervical cavity. Upon speculum examination a red os uteri presented, with a posterior and anterior ectropion, allowing the cervical cavity to open wide under the pressure of the speculum. The length of the uterus was eight and a half centimetres, by the hysterometer. I made a diagnosis of chronic

parenchymatous metritis with a double tear of the os of such depth that I advised her to have surgical treatment by perineorrhaphy, Schroeder's curettage with double Emmet operation. This was accepted by the patient and the operation was done at our clinic March 1, 1892.

Following the operation there was no rise of temperature, and the perineal stitches were taken out on the thirteenth day, showing a good union by first intention. On the 26th of March, the Emmet threads were also removed, and the os was looking well. The patient left us, returning to the clinic every fifteen days to report. The local state was excellent. At the end of June she returned, complaining of pain in the lower abdomen, which was increased by standing, and which she said had come on after a violent effort. We found a slight degree of utero-vaginal prolapsus, and gave her a round pessary and applied faradic electricity twice a week.

I saw her again on the 29th of September, and found that she was better as to pain, but still very weak. She could go about her work, however, and up to January, 1894, was fairly well. Then she was taken with severe pain and was obliged to go to bed. The sensitiveness was so great that the physician in attendance could not make any examination, and was forced to order sedatives. After a few days she was somewhat better and came back to our clinic.

I found then, by the touch, a mass of inflammation occupying all the posterior *cul-de-sac*, and the lateral ones as well; this mass went up to the posterior wall of the uterus and covered the large ligament of the left side, so that I could not limit the organ.

We proposed surgical intervention, and the patient consented, but on account of the relative gravity of the operation I kept her under observation for a time. This was commenced on the 10th of January by placing her in bed in absolute repose, with a permanent application on the lower abdomen of a compress of a saturated solution of ammonia (hydrochlorate). The parts were freely douched every morning with borax water, and tampons of cotton saturated with glycerin were introduced by speculum, one being pushed directly into the posterior *cul-de-sac*, and the others into the lateral ones, four in all each time and renewed daily.

In two weeks the amelioration was considerable; the swelling in the *culs-de-sac* had diminished and the uterus was now mobile; but a hard portion still existed in the posterior *cul-de-sac*. The patient continued to improve, and the treatment was continued for a few days, when she was allowed to return home, coming once a week for examination. I have seen her since several times, the last only a few days ago, and find her in perfect health.

This is only one of the favorable cases seen under this new treatment by vaginal distention.

This treatment is not only applicable to affections of the adnexa of the uterus, but also to the deviation of the organ itself, notably to retro-deviations. I have applied it to cases, with perfect success, to raise retroflected uteri which seemed, from the symptoms, to have gotten into bad position from adhesions.

I propose to give the history of these cases in a later communication.

ASPERGILLAR KERATITIS.

BY V. T. CHURCHMAN, M.D.,
Charleston, West Virginia.

R. P. M., aged forty-six years, by occupation a carpenter, was sent to me by Dr. W. C. Wysor, of Montgomery, West Virginia, on February 17, 1894. The history given was that on February 1 he was struck in the left eye by a chip of wood as he was looking up at other workmen. The eye became very much inflamed, but gave him no trouble until four days later, when it began to give him severe pain, and has continued to be worse up to the time when first seen. On February 5 there was only a small speck to be seen on the cornea near the outer margin of the corneo-scleral border. At this time he suffered from severe pain, photophobia, and lachrymation. Examination at this time showed a large grayish corneal ulcer which covered the lower and outer quadrant of the cornea. On February 26, the ulceration had continued to spread around the cornea until it had taken up its lower half, except just over the pupil. By March 3 the ulceration had taken in all of the cornea except the upper and outer quadrant. It was now of a grayish-yellow appearance. On March 10, the ulcer had covered the entire cornea, and I advised an enucleation on account of sympathetic disturbances, which was performed on March 11.

This ulceration never seemed to be deeper than the third layer of the cornea. The cornea had the appearance of being covered with a grayish-yellow friable layer. Upon minute examination this layer proved to consist of filaments of the aspergillus fumagatus.

CHRONIC TYMPANIC VERTIGO: ITS RELIEF BY REMOVAL OF THE INCUS.[1]

BY CHARLES H. BURNETT, M.D.,
Aural Surgeon, Presbyterian Hospital, etc., Philadelphia, Pa.

CHRONIC tympanic vertigo is one of the results of chronic catarrhal otitis media. The adhesions and sclerosis in the drum-cavity caused by this disease of the ear, and the consequent retraction of the membrana tympani and the chain of ossicles, force, at times, the stapes too firmly into the oval window, where it is held by the two larger ossicles, the malleus

[1] Read at the meeting of the Medical Society of Pennsylvania, May 16, 1894.

and incus, for longer or shorter periods. Such impaction compromises the space containing the labyrinth fluid, part of the lymph-system of the head, the motor filaments of the auditory nerve are thus compressed, and motor disturbances occur. These consist in vertigo preceded by increased tinnitus, followed by nausea, vomiting, reeling, and falling, but never by loss of consciousness. The same phenomena arise when, with an impacted stapes in the oval window, the quantity of lymph in the labyrinth is augmented by an abnormal flow of lymph into the head. The space in the labyrinth, already compromised by the impacted stapes, as well as by the stiffened membrana in the round window, which no longer yields to pressure from within, is now too contracted to permit an easy flow of lymph to and from the labyrinth. The motor filaments in the auditory nerve are thus compressed, as in the instances of direct and increased impaction of the stapes from forces within the tympanic cavity, and tinnitus and vertigo are the result.

Unfortunately, chronic tympanic vertigo, or aural vertigo, as some call it, is generally mistaken for biliousness, stomachic vertigo, neurasthenia, epilepsy, Ménière's disease, and even apoplexy, and treated as such. As the diagnosis is incorrect in such instances, the treatment is erroneous, and the patients grow worse instead of better. Ménière's disease is an affection of the semicircular canals, and, like hydrophobia, is of rare and doubtful occurrence. Chronic tympanic vertigo, however, is of very frequent occurrence.

In regard to the name tympanic vertigo, which I have applied to the disease, it seems preferable to aural vertigo as being more specific than the latter term. Chronic tympanic vertigo is due to a lesion in the tympanum, as described. Aural vertigo might be due to a lesion anywhere in the ear. Hence the latter term becomes only the general appellation of ear vertigo, and the term tympanic vertigo, the specific one.

Treatment.—From this brief description and definition of chronic tympanic vertigo it becomes manifest that the only cure consists in liberating the stapes. Treatment of the nares, naso-pharynx, and middle ear by sprays and inflations fails signally in most cases, as do medicinal and electrical treatments. The aurist is therefore obliged in many cases to resort to surgical means to liberate the stapes in order to relieve intralabyrinthic pressure.

Various ways of doing this have been suggested, such as excision of the membrana tympani, with one, two, or all three of the ossicles, mobilization of the incus and of the stapes, the removal of the stapes alone, etc.

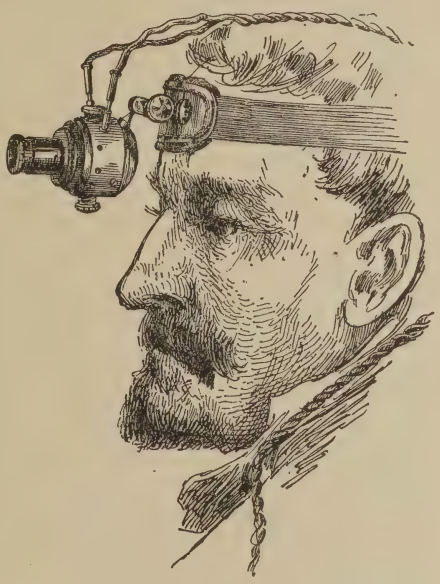
Without discussing the merits and demerits of these operations, permit me to say, that, after trying some of them and observing others, I have settled upon simple removal of the incus, as the most efficient and entirely unirritating surgical procedure in the tympanum, to liberate the stapes and relieve the tinnitus aurium and vertigo consequent upon the lesion of chronic catarrh of the middle ear. The hearing, too, in these cases is most likely to be benefited by removal of the incus only.

So far as I can discover, the first effort to relieve chronic tympanic vertigo by a surgical operation on the tympanum was made by the writer in May, 1888, and the fact reported to this society at its meeting in Philadelphia, in June of the same year. I had already sketched the mechanism of aural vertigo in chronic catarrh of the middle ear, in a paper read before the Philadelphia County Medical Society in February, 1882.

In seventy-five tympanic operations for various aural diseases, I have operated upon the tympanum twenty times for the relief of chronic tympanic vertigo. All these operations were performed upon the etherized subject, the ear being illuminated by a six-volt electric lamp supported on the operator's forehead (Fig. 1), and run by a portable storage battery, eleven pounds and six ounces in weight, as devised by the writer.

In the first seven cases the membrana tympani and malleus were removed. This was followed by entire relief of the tinnitus and vertigo in the worst case, one in which the vertigo sometimes had been so severe and so sudden as to oblige the patient, a woman, to take hold of some object in the street to prevent her falling. This case was immediately relieved by operation in 1888, and has remained well to the present time.

Fig. 1.



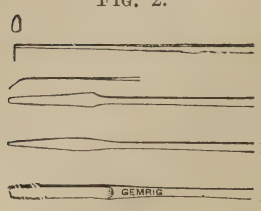
The other five cases of *total excision*, which presented less distressing tinnitus and vertigo before the operation, were relieved of their symptoms, and, so far as I can discover, have remained so.

Finding, however, that total excision of the membrana tympani and malleus in these cases and in all other forms of so-called chronic catarrh of the middle ear was followed by more or less reaction, even though delayed in some cases for over two years, I abandoned this form of tympanic operation in such cases, and for nearly two years have limited myself to a removal of the incus in cases of chronic tympanic catarrh accompanied by tinnitus, deafness, and vertigo.

Operation.—After the patient is fully anæsthetized by ether, an incision is made with a slender knife (Fig. 2, B) in the membrana close to the annulus tympanicus, and the incus-stapes joint exposed. The slight hemorrhage which may follow is gently mopped away with absorbent cotton on a cotton-holder. When the bleeding has stopped, and not before, an incus

knife (Fig. 2 D) of my own device[1] is passed behind the descending shaft of the incus and this bonelet drawn away from its connection with the stapes. A little patient and gentle traction upon the long shaft of the incus, with the same incus knife, brings the bonelet further outward and downward, until the ossicle is gently pulled into the auditory canal.

Fig. 2.



By the removal of the incus the retractive power of the tensor tympani muscle and the malleus acting through the incus upon the stapes, is abrogated. The stapes is thus liberated, and the stapedius muscle, relieved now of the antagonism of the tensor tympani, acts more freely in drawing the stapes from the oval window and retaining it in a normal position of isolation in the oval niche.

Thirteen cases of chronic tympanic vertigo have thus been operated upon by the writer, with most encouraging results, especially in the worst cases, viz., those in which the subjects had been suddenly attacked with vertigo, often in the street, and forced to sit down or hold on to some support to prevent their falling. In no case of removal of the incus has there been subsequent reaction in the drum-cavity. More or less relief has accrued in all cases, without any intercurrent and undesirable symptoms.

That morbid retraction of the conductors of sound and impaction of the stapes are the cause of chronic tympanic vertigo, and that this disease is relievable by removal of the incus is amply demonstrated by the following cases, which are the latest in a series of twenty similar ones.

Case XVII.[2] (In a series of twenty).—Mrs. K., age forty-six, of Maryland, referred to me by Dr. S. Weir Mitchell, December, 1893. The patient had an attack of acute catarrh in the head over three years before the date of her first visit to me. Soon after the catarrh of the nares and naso-pharynx, tinnitus and dulness of hearing were observed in the left ear, and fifteen months later vertigo was felt, and attributed by the patient to the discomfort in her ear. She felt more or less vertigo all the time, became depressed in spirits, and suffered from more frequent and severe paroxysms of tympanic vertigo. These attacks numbered, at last, two or three a month, and made the patient unwilling to leave the house alone. Finally, after much treatment for nervous prostration, but none for her ear, the seat of the disease, the case was taken to Dr. Mitchell, who, recognizing the true nature of the disease, referred the sufferer to me.

Otoscopic examinations revealed a thickened membrana on the left side; incus not visible through the membrane; hearing much reduced; nares normal. Chronic tympanic vertigo, due to retraction of the ossicles and undue impaction of the stapes in the oval window, was diagnosticated, and the removal of the incus advised, in

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[1] A blade one millimetre wide and one and a half millimetres long, set at right angles to a shaft six to seven centimetres long. (See Fig. 2, D.)

[2] Cases I.–X., Medical News, Philadelphia, May 13, 1893; Cases XI. and XII., Medical News, September 30, 1893, and Cases XIII.–XVI., Medical News, April 28, 1894.

order to liberate the stapes. Consequently, though the patient was in a very nervous condition, she was etherized January 23, 1894, and the incus removed after myringotomy in the upper posterior quadrant of the membrana.

January 24. The patient can walk decidedly better and is very cheerful. Hearing unimproved and tinnitus unchanged. The patient goes home to-day.

Unfortunately, this patient took cold on her way home and seemed worse in every way for some time. By March 15, however, when she came to see me, I found that the tinnitus was much less, there had been no paroxysms of intense vertigo for some weeks, and, in fact, the vertiginous tendency seemed permanently banished. The patient looked five years younger and was very active on her feet, being no longer in fear of vertigo and falling. Thus the object of the operation had been attained.

Case XVIII.—Mr. W. P., of Philadelphia, aged thirty-four, a clerk, consulted me January 29, 1894, for tinnitus in the right ear, more or less paroxysmal in nature and culminating at times in vertigo.

Otoscopic examination of the right membrana revealed that the membrane was perforated below the manubrium, and through the heart-shaped opening the mucous membrane beyond gave evidence of having been the seat of chronic purulency. The rest of the membrana was thick and rigid, seemingly attached to the incus or its remnant, and lying against and pushing inward the stapes, which bone, however, was *not visible.*

The deafness in this ear was profound. For two months previous the tinnitus had been increasing in the right ear, and the patient had experienced an unaccountable tendency to vertigo, which he supposed to be due to stomachic derangement. The exacerbations of vertigo became more frequent and more intense, until the patient was afraid to walk in the street alone, and at last, in February, he ceased to go to his business on account of disability induced by the tinnitus and tympanic vertigo.

It now became manifest that these disagreeable symptoms in the right ear were due to impaction of the stapes in the oval window. It was therefore proposed to liberate the stapes by cutting into the thickened, upper posterior quadrant of the membrana tympani, and then removing the incus. The patient was etherized March 2, 1894, and a wide incision made in the thick membrana. A piece of the long shaft of the incus (the only vestige of this bonelet) was found imbedded in the thickened membrana and removed. This exposed and liberated the stapes, which was found to be *very movable.* Owing to the upward shrinking of the membrana, as I have observed in other cases of loss of the incus from chronic suppuration, the stapes appeared relatively very low, nearly on a line with the lower end of the manubrium. The stapes is still plainly visible and readily movable. After the operation the vertiginous tendency diminished. In a week the patient was able to walk alone in the street, and he returned to business. The tinnitus grew less, but not as rapidly as the vertigo. The hearing was not improved.

In seven other cases of tympanotomy and removal of the incus, I have found, at the time of the operation, mobility of the stapes, notwithstanding the usual symptoms of chronic catarrh of the middle ear. Tinnitus and vertigo have been relieved in all of these, but the deafness has remained *unchanged,* notwithstanding the persistent mobility of the stirrup. This I believe to be due to the fact that in these cases the proximal nerve-structures in the percipient organ—those nearest to the vascular structures of the middle ear and most readily affected by the catarrhal disease in the tympanum—are atrophied, while the distal nerve-tissues in the semicircular

canals—those most remote from the chronic vascular changes in the drum-cavity—retain their functions, and are impressed by impaction of the stapes.

CASE XIX.—Miss H. O., of New York, forty-seven years old; had suffered from chronic catarrhal deafness and tinnitus for several years. Finally chronic tympanic vertigo had been developed. Otoscopic examination, March 14, 1894, revealed a greatly retracted and thickened membrana tympani; incus not visible through the membrane; no hearing on this side. March 16, the patient was etherized and myringotomy in the upper posterior quadrant was performed. The incus-stapes connection could not be seen. The incus, however, was carefully disarticulated from the stapes by means of an incus-hook-knife (Fig. 2, D), and its long shaft drawn into view. The incus was adherent in the attic, and when traction was made to remove the bone, the long descending shaft broke off. The ear was then slightly stopped with boric-acid cotton. The patient went home in four days. No reaction occurred in the ear.

May 10, 1894. The patient called to see me and reported much less tinnitus and a greatly diminished tendency to vertigo.

CASE XX.—Mrs. C., of Philadelphia, aged forty-seven years, consulted me regarding aural vertigo, April 2, 1894. The patient stated that she had suffered from chronic catarrhal deafness and tinnitus, in both ears, for several years. Within four months the tinnitus in the right ear had greatly increased and was so intense at times as to cause dizziness and faintness.

Otoscopic examination revealed a thickened membrana, retracted and forming a very obtuse angle with the posterior wall of the auditory canal. The incus could not be seen through the membrana. Chronic tympanic vertigo, from undue retraction and impaction of the stapes, was diagnosticated, and the patient was advised to submit to removal of the incus, for which operation she had been, indeed, sent to me. Therefore, on April 17, 1894, the patient was etherized and the incus, which was placed high in the attic, was removed with difficulty, because the manipulations in such a case must be excessively delicate and very slow for the sake of caution and gentleness.

The patient felt no relief of any kind for ten days; then the tinnitus diminished and there was much less tendency to vertigo.

The hearing in the left ear had by this time improved considerably: tuning-fork $\frac{2}{1'2}$, instead of nothing before the operation. She hears isolated words, too, much better; six inches before the operation, one to two feet now. The tongue is numb on top, from irritation of the chorda tympani.

April 30. Tinnitus very slight and no tendency to dizziness or vertigo. Hears conversation much better in the right ear.

May 7. The patient continues free from vertigo, notwithstanding a severe cold. Perforation in the membrana has been closed a month.

TREATMENT OF TRAUMATIC EPILEPSY, WITH REPORT OF CASES.[1]

BY J. I. DARBY, M.D.,
Americus, Ga.

WITHIN the two last decades, there has been perhaps more scientific progress made in brain surgery than in all the past ages up to the beginning of that period, and judging the future by the past, it does not appear unreasonable for us to expect the next decade to bring still grander developments than any yet achieved in this department of medical science. The modern surgeon, with his better knowledge of cerebral physiology and the use of antiseptics, has been enabled to go with his scalpel into regions where the anatomist of only a few years ago declared it fatal for him to intrude, and I predict that the end is by no means reached. The vast amount of valuable knowledge accumulated by our profession has been gathered up from the field of operations by the multitude of busy practitioners who have given us their individual observations and experiences in their special lines of work; this compels us to acknowledge that we owe the profession a debt of gratitude, including the contribution of any special knowledge we may possess, for what we have received from those who preceded us; and it is for this reason that I venture the reading of my paper on the "Treatment of Traumatic Epilepsy," not that I have any original ideas to offer, or much work to report; but in contributing my mite of experience I discharge an obligation due the profession by every working member of it. As this is a body of medical practitioners, and not of mere students of medicine, I do not consider it necessary, nor at all proper, for me to go into a lengthy definition and description of the symptoms of the different varieties of epilepsy, especially as it is my purpose to speak only of the traumatic variety of the disease, besides feeling assured that you are all sufficiently well acquainted with the different phases of this malady to need no copied definitions from me; and for these reasons I shall proceed to speak of the cause and means of relief of such cases as are amenable to surgical treatment and report a few cases in my own private practice.

Traumatic epilepsy is a disease of the nervous system produced by an injury and attended by abnormal disturbance of nerve-force and, in most instances of the well-developed variety, by temporary loss of consciousness and more or less marked convulsions. In seeking for the cause of epilepsy we cannot fail to recognize the influence of hereditary tendency or constitutionally weakened nervous system. But there must be an injury producing its irritating effect, either directly or indirectly, upon the brain, before

[1] Read before the State Medical Association of Georgia, 1894.

we can have traumatic epilepsy; sometimes it is caused by traumatisms which appear to be slight and on distant parts of the body instead of being on the head. Frequently it happens that the disease does not manifest itself for quite a long time after the receipt of the injury, and in the beginning the attacks may be very slight, gradually growing more frequent and severe until the typical seizure is inaugurated and the subject perhaps a hopeless victim. The most frequent cause of epilepsy is a fracture of the skull in which the bone is depressed and resting on the brain; sometimes the outer portion of the skull does not indicate the extent of injury done in the inner table, which may be very extensively fractured while the outer part appears but little damaged. Irritable cicatrices have been known to produce violent attacks of epilepsy which cease altogether upon their removal. Hæmatomas and pathological growths beneath the dura resulting from violence also have a causative relation to the disease; malignant neoplasms springing up in the cicatrices of wounds have been known to produce it, and injuries on different parts of the body have been recognized in a causative relation by such men as Dr. Briggs, whose case of diseased tibia is reported in Keen's "American Text-Book of Surgery." The patient, who had both a depressed fracture of the skull and necrosis of the tibia, was operated on for the latter trouble, and five years subsequently had experienced no return of the epilepsy, notwithstanding the injury of the skull was not interfered with in any way; and this shows that wounds on distant parts of the body may produce it as well as depressed fractures and other lesions upon the head.

J. T., an old Confederate soldier, aged about fifty years, came to me with an ounce ball in the left side of his neck, and gave the following history. During the siege of Knoxville, Tennessee, in 1863, he was standing in a stooping posture and looking in the direction of the enemy, when he was shot by a minie-ball in the left superciliary ridge, the ball knocking the left eye out and passing on in a circuitous route behind the ear and down into his neck behind the insertion of the sterno-cleido-mastoid muscle to the clavicle. That portion of the Confederate line where he was shot soon fell into the hands of the Federals, and he was left two days in this condition upon the field without medical attention, it being taken for granted that he was dead, but when a detail was sent out to bury the dead they saw that there was still life in him, and sent him to a field hospital, where medical attention was rendered and resulted in his recovery. Twenty-five years having elapsed between receipt of the injury and my first examination, it was difficult for me to say how much injury had been primarily inflicted, but it was obvious that the brain had been injured in the neighborhood of the left eye, and there was quite a depressed cicatrix in the superciliary ridge. He stated that after his recovery from the immediate effects of the wound there was but little trouble from it until about three years prior to the time he came to consult me, when he began to experience strange nervous spells whenever he attempted to sleep on his right side. These spells gradually became more and more frequent and severe, until it was obvious to those

who witnessed them that they were well-marked epileptic convulsions. After hearing his statement and finding the ball located as just stated, I suggested to him that his "spells," as he called them, might be due to the presence of this bullet in his neck, and advised him to submit to an operation for its removal, to which he readily consented, and I cut it out without the use of an anæsthetic, he absolutely refusing to take chloroform or ether. The bullet weighed one ounce, and was slightly flattened and bent upon itself. The wound was treated after the usual antiseptic method and healed kindly, and the patient soon began to manifest signs of general improvement. His seizures grew lighter and less frequent, and in less than a year from the time of operation they ceased altogether, and have not returned, notwithstanding the fact of his being a very intemperate man and his having received no medical treatment to prevent a relapse.

I have frequently asked myself the question whether his epilepsy was due to the pressure of the ball upon the carotid artery, interfering with the cerebral circulation when he lay down upon his right side, or whether it was produced by reflex irritation set up by the ball pressing upon some of the nerves in the neck. I am disposed, however, to believe that the cause was pressure interfering with the proper distribution of blood in the brain, especially as epilepsy did not manifest itself until he was getting old and the adipose tissue was less abundant than at the time of receiving the wound and for many years thereafter. When the adipose tissue in the neck had become absorbed, as it sometimes does in the aged, the ball came in more direct contact with the vessels and produced more effect. Another reason for this opinion is that the seizures never came on while he was awake or sleeping on his left side. This man is still living in Alabama.

Sometimes, as before stated, the epilepsy does not come on for quite a long time after the reception of the injury, especially where the traumatism is slight, requiring considerable time for the meninges to become sufficiently thickened to produce the necessary pressure and thus become a source of long-continued irritation and vexation to the nervous system. Injuries of the cranium received in early childhood frequently give but little, if any, discomfort, until the period of puberty is reached, even in cases where the depressed bone rests upon the cerebral cortex. Sometimes the causative injury has been forgotten by the patient and his friends, the brain being quite tolerant of pressure and the sutures in the skull not fully ossified at this early period of life.

In 1884 I was called to see a young man in the country who, during his fourth year of life, was injured by a sharpened stick falling from a tree on his head, producing a depressed fracture in the upper and rather posterior portion of the left parietal bone. A physician who was practising in the neighborhood at the time was sent for, and pronounced the injury of trivial importance, did nothing more than to apply a little axle-grease or some such remedy, and went home, leaving instructions for the family to send for him again if the patient's condition required it. As there was but

little suffering attending the wound, the doctor was not recalled, and the little patient was soon out again, and, to all appearances, as well as usual, and he continued to grow and enjoy good health until he was sixteen years old. He then began to experience strange nervous manifestations occasionally, which as time went on became gradually more frequent and severe until a genuine case of epilepsy or *grand mal* was developed. Remedial measures were resorted to by his attending physician, but, notwithstanding the intelligent efforts instituted by him, the seizures continued to grow more frequent and alarmingly severe; so much so that his life seemed to be in imminent peril, and in this condition I first saw him in his nineteenth year. Upon examination of his head I found the cicatrix about one inch long in the locality mentioned, and learned from his mother the particulars of the injury, but failed to make either her or the patient believe at this time that the wound received in his infancy had anything to do in the production of his epilepsy. They could not understand how so many years of good health had passed away between the receipt of injury and the beginning of his epilepsy. After telling them all about the necessity for a surgical operation, and describing the character, dangers, and reasonable hopes attending it, and failing to procure their permission to trephine, I went home and never saw the patient any more for two or three months, but the father of the boy finally came back and said that he, his wife, and the patient wanted me to operate if I thought it could be done without destroying the life of the young man; and as there was nothing to be gained by delay, it was agreed that two days subsequently should be the time for doing the operation. Accordingly arrangements were made, assistants were procured, and at the appointed time we were on hand and ready to proceed with the work. The patient was anæsthetized with chloroform and the scalp shaved and well scrubbed with antiseptic solutions. The integuments were turned back by making a horseshoe incision sufficiently long to enable us to get plenty of room to remove a half-inch button of bone immediately in the most depressed portion of the cicatrix. When the bone was sawed through the dura mater was found adhering to it, having probably grown into the fissure while the process of repair was taking place, but the attachments were shaved loose as close to the bone as possible, and after cutting away the thickened edges of bone with forceps for some distance, there being no other pathological conditions observed, the injured dura was stitched with catgut, the parts irrigated with carbolized solution, and the integument returned to its proper position and retained *in situ* by antiseptic silk sutures. The patient rallied well from the chloroform narcosis and was but little shocked, considering the character of the operation he had undergone. The wound was dressed antiseptically and in due time healed kindly, and the patient made an uninterrupted recovery, and has not from that day until the present time had another well-defined epileptic seizure, although he felt the *aura* and giddy sensations for several months after the operation, which gradually grew less and less until they ceased entirely, and

he is now living near White Pond, Alabama, a healthy, useful, and happy man.

I will mention one other case, which, however, is of too recent date to be of much importance, a sufficient length of time not having elapsed since the operation to determine how much benefit the patient will derive from it. The patient, a negro man twenty-seven years of age, was struck on the head seven years previous to the operation with a pick-handle, producing a depressed fracture of the upper portion of the frontal bone on the left side of the longitudinal fissure. The cicatrix was nearly two inches long and a considerable portion of the bone was driven down upon the brain, but the patient did not experience any great suffering at the time of injury, and never had an epileptic seizure until four years after the receipt of the wound, but when they were once inaugurated they rapidly grew more frequent and severe until the first of last January, when he was trephined by my partner, Dr. R. E. Cato, and myself. We removed two half-inch buttons of bone about one inch and a half apart, and with a rongeur cut away the bridge of bone between the openings and made a Gault trephine. The edges were very much thickened, requiring considerable work with rongeur, but it was finally pretty satisfactorily done, and the integuments returned and held *in situ* by catgut sutures. The drainage consisted of a small piece of iodoform gauze which was left in the most dependent portion of the wound for three days, and then removed on account of a slight epileptic fit which was believed to be due to the pressure produced by the gauze becoming saturated and heavy with secretions from the wound. The wound was treated after the modern antiseptic method, and the patient made a good recovery, and has not had another symptom of his former trouble, and says he feels better than he has for five years previously. He is taking large doses of bromide of potassium, three times daily, which will be kept up for quite a good while to prevent a relapse.

The only remedies to be relied on in the treatment of traumatic epilepsy are the trephine in depressed fractures and the scalpel in other traumatisms which may produce reflex irritation of this character, and when the bone is removed in fractures the dura should be opened, and if the cortex of the brain shows signs of injury it should be carefully cut away and the wound stitched with catgut and closed antiseptically. When the bone is not cut away in small bits, it may be replaced in the opening and expected to cause no trouble, provided the button is not thicker than the surrounding bone.

Prevention is better than cure, and it should be the purpose of the surgeon to prevent these phenomena by operation in all cases of depressed fracture as soon as he sees them, as the operation is more simple at that time, and if a button of bone has to be removed, he can usually select the locality for his trephine and thus keep away from dangerous areas, such as the meningeal arteries and sinuses, as well as preventing strong adhesions of the dura and the development of epilepsy. After surgical operations for this disease the patient should be kept on medical treatment for at least two years to

prevent a return of the trouble, and it is in this class of cases that we may reasonably expect good results. Bromide of potassium in full doses has perhaps given the best results, but of late a solution of bromide of gold and arsenic, given in five- to eight-drop doses, has given very promising results.

The patient should, if possible, be induced to live a temperate and systematic life, sleeping regularly, eating moderately, and keeping his digestive and excretory organs in healthy condition; especially is it necessary for him to abstain from the excessive use of tobacco and alcoholic stimulants.

CLINICAL LECTURES.

CHRONIC SALPINGO-OÖPHORITIS AND SYPHILIS.

CLINICAL LECTURE DELIVERED AT THE BUFFALO GENERAL HOSPITAL, GYNÆCOLOGICAL CLINIC.

BY M. D. MANN, A.M., M.D.,

Professor of Gynæcology and Obstetrics, University of Buffalo.

THIS patient was brought into the ward Thursday. She has been feeling badly for eight or ten weeks, but her previous health was excellent. For four weeks she has had a breaking-out on the body. There is no history of a local sore nor of falling out of the hair, but she has at present a sore throat. About the time that the eruption appeared she suffered with a pain in the left side, and a leucorrhœa has developed since. Her monthly periods are irregular, coming sometimes at intervals of four, sometimes of two, weeks. The loss of blood is also irregular, being sometimes slight, sometimes excessive. The menstruation is usually painful, the pain being felt especially in the left side. The bowels are constipated.

The history is very indefinite, the patient not having noticed her symptoms closely. Notice that, although she complains of pain in the left side at the time of menstruation, she gives no account of a true dysmenorrhœa. Her present pain she locates in the left ovarian region. Her temperature has ranged about 99° F., and the pulse has been rather rapid. Her general condition is poor and she is emaciated. A diagnosis as to her exact condition is quite impossible without an examination. It is astonishing to find how serious a trouble may exist with slight subjective symptoms. As a rule, I hesitate to make a vaginal examination in a young unmarried woman; but in this case the symptoms demand it. There is a large tumor —let us call it—on the left of the uterus, and so high that at first I could scarcely reach it. The abdominal walls were so rigid and the parts so

sensitive that I could feel nothing with the external hand. But by telling the patient to breathe rapidly through her mouth I got her to overcome the tension of the abdominal muscles, so that with the finger on the outside I could make the mass impinge against the internal finger. It is a truism that we cannot estimate the size of an object of which we can touch only one side, yet many men forget the value of bimanual examination. By getting this mass between my two hands I can allow for the thickness of intervening parts, and estimate its size quite accurately as about that of a hen's egg. It is quite tender, is somewhat irregular in outline, and is quite firmly fixed in the pelvis, though it can be moved with the surrounding tissues to a limited extent. The uterus is pressed somewhat to the right and anteriorly and moves with the mass, being apparently connected with it, since the mobility of each is slight. Lying as the mass does, a little to one side of the uterus, and above and behind the fundus, we can say that it is in all probability an inflammatory trouble of the tube and ovary. From its location alone, it might be a small tumor of the ovary or in the broad ligament; but it has the peculiar feel and the sensitiveness of an inflammatory mass. There is naturally ample opportunity for error in the diagnosis of small pelvic masses, but there is a peculiar characteristic sensation imparted to the finger by inflammatory new growths. Imagine that this trouble has existed for a year or two, and that it has recently become worse. Its origin is probably gonorrhœal, yet there is no history of an acute blennorrhagia, only a vague account of an occasional leucorrhœa, which had not troubled her at all for some time prior to the time which she assigns as the beginning of her present disease. Still, there might have been an infection which was mild in its external manifestations, but which progressed internally. The eruption is undoubtedly a syphilitic psoriasis.

The patient has been put upon mixed treatment, mercuric iodide gr. $\frac{1}{30}$ and potassium iodide gr. x, t. i. d. The mass is quite hard; it does not give the feeling of an abscess; there has been no recent attack of pelvic peritonitis, and I see no reason for opening the abdomen at present.

Occasionally pus is found in cases in which it has not been suspected. Last Thursday I operated on a patient, a young unmarried woman, knowing that there was extensive inflammation of the tubes and ovaries, and I found pus. In that case I believe it was not of specific origin. Again, I have found pus in cases where the specific infection had occurred six or eight years before, the patient suffering only from general malaise and some pelvic pain, without peritonitis or acute attacks of inflammation. Pus under such circumstances loses its infectious character; the watery parts become absorbed and a cheesy mass remains. Such patients, however, usually suffer from symptoms ascribable to the tubes, and their general health is usually so poor that operation is indicated, and is usually followed by great relief. It is noteworthy that at such operations the caseated pus sometimes comes in contact with the peritoneum without setting up a septic peritonitis. I am inclined to agree with the theory that a gonorrhœal infection is not neces-

sarily followed by the formation of pus; that there must be a mixed infection before pus can be formed; the gonococcus simply producing a condition which favors the lodgement of pyogenic bacteria.

This woman will, perhaps, get along very comfortably and not suffer much, except at her menstrual periods. Rest in bed and the quiet, regular life and care which she will get in the hospital will do much for her. The ovarian pain will be relieved by blisters. The treatment with mercury and iodine may also have a beneficial effect in causing absorption of the inflammatory exudate. Such cases are very common; they do not always require an operation, but they do need careful watching so that immediate interference may be made if the indications for removal of the mass arise.

INTERLOBAR PLEURISY.[1]

CLINICAL LECTURE DELIVERED AT THE CHARITY HOSPITAL.

BY PROFESSOR POTAIN,

Member of Paris Academy of Medicine; Professor of Clinical Medicine, Paris Faculty; Physician to the Charity Hospital, Paris.

GENTLEMEN,—I wish to draw your attention this morning to a patient who is lying in the men's ward in bed No. 28, not because the gross diagnosis is a very difficult one, for you would easily discover that it is a common tubercular case in the third stage, presenting an area of marked dulness under the left clavicle with a cavernous souffle and purulent sputum which contains a large number of Koch's bacilli; but in addition to these ordinary lesions the case presents some very interesting symptoms that it will be well for us to study. First, I will mention that there is evidence of an old pleurisy, which, no doubt, was the original cause of his present difficulty. His history is as follows: He had been well up to the age of nineteen,—namely, in the year 1883,—when he developed an acute febrile affection with pain in the left side and difficulty of breathing. The traces of this pleurisy are quite apparent to-day, as you can see from where you are sitting, by a decided falling-in of the left side of the chest. Measurements do not give any definite results, as the left side gives forty-one centimetres and the right one 41.05. Vocal fremitus on the left side is diminished, while the thoracic movements are normal.

This falling-in of the chest-walls is complicated with another phenomenon that is not explained by it,—namely, a considerable diminution of the vesicular murmur on the left side. This is owing to the displacement of the heart, which is not very much increased in size or volume,

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[1] Translated by Thomas Linn, M.D., by special arrangement with the author.

being one hundred and five square centimetres in extent, but the organ is displaced, as we find its apex-beat five centimetres outside of the nipple. The base instead of being upon a level with the right border of the sternum is three centimetres from it on the left side. This unusual position of the heart is not because of some affection of the right side, but is owing to the mediastinum being displaced some five centimetres towards the left, and from this condition arises the considerable diminution of the capacity of the left side. The diaphragm is raised by this, and Traube's space is, of course, increased.

I should now call your attention to the transmission of the heart's movements to the lungs, and the modifications that result in the pulmonary sounds. These can readily be distinguished in this case. We hear a cavernous souffle, and a *saccade* or shaky sound, which the heart itself could not produce, so that these sounds must proceed from the lungs while they are under the influence of the heart. There is a sort of pause or transition in these cardio-pulmonary sounds that is quite different from the usual sounds heard over the heart, as the heart's movements produce sharp, pulmonary shakes that cause cavernous expiration and also sounds that are similar to the usual pulmonary sounds. I will return to this curious question later.

To continue the medical history of the case. Let me say that he had passed four years in very fair health, and considered himself well, when he was suddenly seized with an attack of grippe accompanied with a condition of profound weakness with expectoration which has continued ever since; great loss of flesh ensued, also an irregular fever and marked aversion to any kind of exertion.

On physical examination we find that besides the lesions under the left clavicle, we hear below this point a loud souffle which at times has an amphoric character, and normal resonance is much diminished at this part of the chest. He has, moreover, a high-pitched cough and bronchophony. In the external portion of the axilla the respiratory sounds are normal. We get, then, the signs of a cavity; but is it a true one, or are these sounds transmitted ones? If there is a cavity, is it tubercular? because we can have with such sounds a large bronchial dilatation, or an empty hydatid cyst, or even a cavity consecutive to an interlobar pleurisy.

This last diagnosis is the true one, and, indeed, the only one that merits our consideration, for he has never had a cyst emptied. In such cases the patients will always tell you, as they are apt to remember well the occurrence of such a growth.

Interlobar pleurisy is shown by the signs that any pleurisy gives, but it has a special seat,—the interlobar fissure. You know that this commences at eight centimetres from the summit of the lungs, and continues to a level with the third intercostal interspace. It runs from before downward, and ends at the lower border of the lung near the sixth intercostal space, after having passed close to the inferior angle of the scapula. It is just in this

region that we get the sounds I spoke of. The dulness has an elliptical form of which the centre, or the dullest portion, corresponds to this interlobar space. It is not always so in these cases, for it will sometimes follow very closely the interlobar fissure, descending obliquely with it and ending in the subaxillary region, leaving above and below a region of resonance. In the present patient the sounds are not the same in front as they are in the back. In front we find the shaky sound I have spoken of, caused by the heart's action, but we cannot get this behind.

A fact against the diagnosis of interlobar pleurisy is that we have no history of an interlobar vomica, which is often found in such cases. Interlobar pleurisy most often commences, in the acute stage, with a violent stitch in the side with fever, and it is most often purulent from the first. After a short time, as a rule in two weeks, a terrible pain is felt in the subaxillary region, and after a sharp fit of coughing a vomica of pus takes place from the lungs; this is usually of a brownish color and fetid in smell. A constant expectoration follows. Nothing of this kind took place in our patient, and the question may be asked if it is a necessary condition in interlobar pleurisy? No; certainly not. It is produced when the pleural sac can open into a large bronchial branch, but in many cases the pleural sac is only eroded very slightly, and a minute hole or series of orifices may open into the pulmonary vesicles or into the smallest pulmonary tubes, so that the liquid may pass through very slowly, and is evacuated by expectoration only.

This termination is not accompanied by pneumothorax, and some writers have tried to explain its absence by various theories. I think that the liquid gets through by the effort made in coughing, and, inspiration being less strong than expiration, no air enters. Besides, we know that a liquid that has once mixed with air cannot well get back into these narrow tubes. This simple explanation seems to me to be better than the system of imaginary pumps that has been described by certain authors.

All the facts we possessed in this case did not allow us to make a sure diagnosis, and we waited for some days, when we found that the posterior dull area began to recover its normal resonance and the vesicular murmur became distinct; there was an evident modification going on, but the expectoration remained the same. We concluded that an accumulation of pus had been evacuated, and the physical signs showed that the pulmonary congestion had disappeared.

At the superior portion of the lung the amphoric souffle continued to extend, and was prolonged to the lower part. We still had the difference between the posterior and anterior sounds; I do not mean the character nor the intensity, but the rhythm, which cannot be modified by transmission. We also found that the sounds of the superior portion were modified by position. If the patient sat down they changed, as being no longer under the influence of the heart, this organ having changed its relation to the cavity by the difference in attitude, and so it ceased to give the peculiar

shake to the sounds. The sounds were also heard at the moment of expiration only, and not during every expiration. The physical signs of the anterior aspect of the chest, then, were the same as the posterior when the patient was sitting. From this new and thorough examination we have a right to conclude that these sounds were produced in a cavity situated below the clavicle, and thence were propagated to the posterior portion of the lung.

You must not think, gentlemen, that all this is only to show how shrewdly we can establish our diagnosis, for we had need to clear up these points in order to treat the case properly; and these interlobar lesions are very serious in nature. It is true that they will sometimes cure themselves when they are not accompanied with pneumothorax; but I fear they are often overlooked. When there is an interlobar focus of this kind which seems to go on indefinitely and constitutes an excellent preparation for phthisis, or, at least, strengthens a phthisical tendency already existing, it is a very important matter to act promptly, and I have seen such cases cured, at least for a time, by proper treatment.

Medical treatment is useless, and we must call upon the surgeon to open the way of escape for the secretions that have formed in the pleural cavity. The evacuation of the pus may, I repeat, bring about a cure even when tuberculosis already exists. Exploratory punctures may be useful, and should be done before an operation, but they may be useless, or at least negative, and may not by any means prove that the trouble does not exist, for they may not enter the cavity. If you get serious signs it is best to proceed to exploration of the cavity by puncture before operating, as a rule, but do not hastily conclude that an operation is not necessary.

In our present case we have concluded that there is a large focus both above and below. Would it be well to operate at once? Such treatment has been resorted to in many cases and with perfect success, but we cannot be sure that there are not a number of foci besides the large one we find by our examination.

If our medical treatment does not improve this case, and the expectoration continues to weaken the patient, this case—as we feel sure that there is only one large cavity—will be a good case for the surgeons, for his general health is by no means completely gone. We will, therefore, wait a little longer to see how he gets on before making a final decision.

REVIEW OF MEDICINE.

MEDICINE.

IN CHARGE OF JUDSON DALAND, M.D.,

Instructor in Clinical Medicine and Lecturer on Physical Diagnosis in the University of Pennsylvania; Assistant Physician to the Hospital of the University of Pennsylvania; Physician to the Philadelphia Hospital and to the Rush Hospital for Consumptives.

Appendicitis Obliterans. (*Journal of the American Medical Association*, March 24, 1894.) By Nicholas Senn.

The author details five cases of this disease, and his remarks upon this subject are most interesting and conclusive. Any contributions from the pen of this brilliant surgeon are sure to contain much valuable thought, and this article is not an exception. The ten illustrations aid materially in the comprehension of the text. The conclusions arrived at may be summarized as follows:

1. Appendicitis obliterans is a comparatively frequent form of relapsing inflammation of the appendix vermiformis.

2. It is characterized by progressive obliteration of the lumen of the appendix, by the gradual disappearance of the epithelial lining and glandular tissue, and the production of granulation-tissue from the submucous connective tissue, which by transformation into connective tissue and cicatricial contractions starves out remnants of glandular tissue, and finally results in obliteration.

3. The obliterating process manifests a progressive tendency, and may finally result in complete destruction of all glandular tissue and obliteration of the entire lumen.

4. The incipient pathologic changes occur either in the mucous membrane of the appendix, in the form of superficial ulceration, or as an interstitial process following lymphatic infection.

5. The most constant symptoms which attend this form of appendicitis are relapsing acute exacerbations, of short duration, moderate or no appreciable swelling at the seat of disease, and persistence of soreness and tenderness in the region of the appendix during the intermissions.

6. The progress of obliteration may begin at the distal or proximal end, or at any place between, or it may commence simultaneously, or in succession at different points.

7. Obliteration on the proximal side gives rise to retention of septic material, which finds an outlet through the lymphatics, giving rise to non-suppurative lymphangitis and lymphadenitis.

8. Circumscribed plastic peritonitis is an almost constant concomitant of appendicitis obliterans, and hastens the progress of obliteration.

9. Complete obliteration of the lumen of the appendix results in a spontaneous and permanent cure.

In view of the prolonged suffering incident to a spontaneous cure by progressive obliteration, and the possible dangers attending it, a radical operation is indicated, and should be resorted to as soon as a positive diagnosis can be made.

The Complete Washing out of the Intestinal Tract as a Treatment for Cholera and Allied Conditions. (*Lancet*, October 14, 1893.) By Professor Anton von Genersich.

The author states that, in the adult, the large intestine will hold three litres, the small intestine a similar quantity, and the stomach and œsophagus about two litres, making the average total capacity for the gastro-intestinal tract about eight or nine litres; so that, when this quantity has been admitted to the rectum, the fluid begins to run from the mouth. He repeated this experiment on a number of subjects with success, and proposes the name *diaclysmos* for this procedure. He has employed the three-per-cent. solution of tannic acid, as recommended by Cantani, in this manner for the treatment of cholera, with excellent results.

[The value of enteroclysis in cholera is undoubted, and that liquids may pass through the gastro-intestinal tract from the rectum is well known, as was verified by the writer's experiments on seven cadavers, in which success was met with in five.—J. D.]

Formation of Urea in the Liver. (*Kieff University News*, No. 10, 1893.) By W. von Meister.

The author's experiments were made upon rabbits in the Institute of General Pathology of Professor Podwyssocki. He removed from one-half to three-fourths of the liver, and from the result obtained he arrived at the conclusion that the formation of urea ceases after removal of that organ, and that the quantity of excreted urea was in direct proportion to the amount of liver allowed to remain. His conclusions may be summarized as follows:

1. That the removal of one-fourth, one-half, and even three-fourths of the liver is easily borne by an animal and gives a very insignificant percentage of mortality.

2. The removal of the gall-bladder, leaving the hepatic duct, seems not at all to affect the functions of the organism.

3. After complete removal of the liver long duration of life is impossible.

4. After removal of one or more lobes the quantity of nitrogen in the urine decreases, but not to the same extent as nitrate of urea, the proportion of the latter to the entire quantity of nitrogen diminishing.

5. The quantity of urea decreases relatively as well as absolutely.

6. On the other hand, the quantity of extractive substances increases, the nitrogen in these, in proportion to the whole quantity of nitrogen in the urine, also increasing.

7. The relation of nitrogen in the extractive substances to that of the urea increasing proportionately to the increase in the whole quantity of nitrogen, the decrease in the urea is consequently proportionate to the increase in the quantity of extractive substances.

8. The larger the portion of liver removed, the greater is the decrease of urea.

9. The decrease of urea after such removal is especially rapid during the first few days.

10. The formation of urea, without doubt, takes place in the liver.

11. Its primary origin must be looked for in the extractive substances. —*Universal Medical Journal*, April, 1894.

Changes in the Circulation caused by Pyrexia. (*Universal Medical Journal*, January, 1894.) By Dr. Graham Brown.

The results of a series of experiments to determine the viscosity of the blood at different temperatures showed that in fever the heart would have one-tenth less work to do in driving the blood through the vessels, owing to the decrease in viscosity of this fluid.

Diphtheria of the Stomach. (*Universal Medical Journal*, January, 1894.) By Dr. Soltau Fenwick.

The case reported occurred in a child suffering from croup. There was complete anorexia, and the gastric contents contained no hydrochloric acid. Dyspnœa came on rapidly, necessitating tracheotomy. Death followed next day. Autopsy showed laryngeal diphtheria, extending into the finer ramifications of the bronchial tubes. Tonsils, pharynx, and œsophagus were free from disease. The stomach was entirely lined with pseudo-membrane, extending into the pylorus a distance of one-third inch. The lymphoid tissue of the mucous membrane itself was considerably increased. This disease is rare and is usually in association with *pharyngeal* diphtheria in children.

THERAPEUTICS.

IN CHARGE OF ALEXANDER D. BLACKADER, B.A., M.D.,
Professor of Therapeutics, McGill University, Montreal, Canada.
ASSISTED BY
D. I. EVANS, M.D.

Extract of Bone-Marrow in the Treatment of Anæmia. (*London Lancet*, March 10, 1894.) By J. Dixon Mann, M.D.

The writer, after referring to the fact that the red marrow of bone is an important agent in promoting the development of red blood-corpuscles,

relates his experience with the internal administration of an extract prepared from the heads of the long bones of young animals. The bones of recently-killed calves are broken into small pieces, and digested in glycerin for a few days. The extract is then filtered and is ready for use. It is red or reddish-brown in color, and devoid of any unpleasant taste or odor. In several cases of pronounced anæmia, which had resisted treatment by various hæmatinics and appropriate nourishment, the internal administration of this extract in spoonful doses once or twice a day, either pure or spread between thin slices of bread, proved of distinct advantage. The number of the red corpuscles rose rapidly, while coincidently there was a marked improvement in the general appearance.

A Case diagnosed as Tubercular Meningitis treated by Trephining and Drainage of the Subarachnoid Space; Recovery. (*London Lancet*, March 10, 1894.) By Dr. W. W. Ord and Dr. H. F. Waterhouse.

This case presented all the symptoms of a tubercular meningitis with rapid effusion and threatening coma, a diagnosis which had been verified as far as was possible by the eight medical men who saw the case previous to the operation. Distinct immediate relief took place after drainage of the subarachnoid space between the cerebellum and the medulla, with after subsidence of pyrexia and other objective symptoms. One month after the operation the child was apparently quite well, and three weeks later passed through an attack of measles, without any bad symptoms. The writers think that in tubercular meningitis, just as in tubercular peritonitis, we may have two types of disease, one a dry form with much tubercular formation and little fluid; the second characterized by the exudation of a large quantity of fluid, but with comparatively little tubercular material. Just as it is in this latter form that we obtain the best results from abdominal section, so possibly it is in similar cases of tubercular meningitis that we will obtain the best results from trephining the skull and draining the arachnoid space. If attempted, it should be done before any marked signs of pressure have supervened. They think, with Gowers, that if the stage of coma has been reached death is almost certain. They also make reference to the four cases in which Mr. Pachin, of Hull, performed a similar operation, with the complete recovery of one child who suffered from chronic hydrocephalus.

On the Employment of Nuclein Solutions. (*New York Medical Journal*, March 24, 1894; also *American Therapist*, March, 1894.)

Aulde refers in these papers to the investigations of Vaughan which point to the nucleus of the white blood-corpuscle as the active element stimulating cellular activity. Nucleins introduced into the blood perform a twofold function. They possess distinct antiseptic properties and also act as stimulants to protoplasm, whether coming into contact with it in the arteries, veins, or intercellular fluid. These properties are most marked

when nuclein solutions are exhibited during a period of depression, such as may be met with in the anæmias or toxæmias. In the latter class of cases the writer has noted marked changes occurring in the blood in the course of a short time. In certain directions, and under certain restrictions, the writer is satisfied that nuclein solutions as remedial agents possess powers beyond any remedy ever introduced into medical practice. He reports many cases illustrating its value in influenza, bronchitis, anæmia, and malaria.

A Contribution to the Study of the Physiological Actions of Sparteine. (*American Medico-Surgical Bulletin*, April 1 and 15, 1894.) By David Cerna, M.D., Ph.D.

The author publishes an experimental study of the physiological actions of sparteine. The experiments were made particularly on dogs. The actions of the drug on the muscular, nervous, circulatory, and respiratory systems are examined, and from the results obtained the following conclusions are reached: 1. Sparteine causes a brief period of increased muscular irritability. 2. The drug increases reflex action by directly influencing the spinal cord. 3. Reflex action is afterward depressed by sparteine, first through a primary stimulation of Setschenow's reflex inhibitory centre, and secondly by influencing the cord directly. 4. The convulsions produced by the drug, generally of a tetanic nature, are of a spinal origin. 5. The paralysis caused by the medicament is similarly the result of an action on the medulla spinalis. 6. Sparteine increases both the rate of the pulse and the force of the heart. The acceleration of the heart's action is soon followed by a distinct decrease of the same. 7. The primary increase in rate is due to an action on the heart itself. 8. The subsequent decrease in the rapidity of the pulse is of double origin,—a direct cardiac action and a stimulation of the cardio-inhibitory centres, centrally and peripherally. 9. The enormous increase in size of the pulse-curves is probably the outcome of a direct influence on the cardiac muscle. 10. Sparteine increases the blood-pressure by an action on the heart and also by stimulating the centric vaso-motor system. 11. The subsequent fall of the arterial pressure under the drug is likewise the result of a double action,—paralysis of the vaso-motor apparatus and a depressant cardiac influence. Cardio-inhibitory stimulation, through the vagi, is possibly a third factor in the causation of reduced pressure. 12. Both the increased number of the respiratory movements and the secondary depression of the same are due to a direct action on the respiratory centres in the medulla oblongata. 13. Sparteine kills generally by respiratory failure. 14. Sparteine may be classed as a decided cardiac stimulant, its range of action being similar to that of digitalis.

On the External Application of Guaiacol in Feverish Conditions. (Ueber die äussere Anwendung von Guajakol bei fieberhaften Erkrankungen. *Berliner klinische Wochenschrift*, No. 5, 1894.) By Dr. Stolzenburg.

In this paper the writer details his experience with the external application of guaiacol as recommended last year by Sciolla, of Genoa. From two to four cubic centimetres of guaiacol are painted on a portion of the skin, preferably that of the thigh, and this is then covered with some impermeable material. Observations are recorded of its effects in septicæmia, acute tuberculosis, rheumatism, pneumonia, etc. He arrives at the following conclusions: 1. Guaiacol painted in this way over the skin produces a prompt and decided fall in temperature. 2. The first dose in an adult should not be greater than two cubic centimetres. If it is well borne, and the fall in temperature is not too marked, the amount may be increased to four cubic centimetres, which dose it is seldom desirable to exceed. 3. Untoward effects of moderate doses upon the heart and kidneys were never noticed. Large doses in weak individuals produced symptoms of collapse. 4. The symptoms associated with the fall in temperature,—*e.g.*, profuse perspiration succeeded by a chill as the temperature begins to rise again, sometimes weaken a patient to such an extent that its prolonged use cannot be recommended. 5. The observations so far have not been sufficient to show the effect of the treatment on the whole course of any disease.

On the Absorption of Guaiacol by the Skin. (*Semaine Médicale*, February 5, 1894.) By Dr. Linassier and Dr. Lannois.

The writers have carried on observations on the absorption of guaiacol by the skin and its after-elimination by the urine. Their experiments prove that the drug is really absorbed by the skin, as the effect takes place with equal intensity when the patient breathes through a tube opening outside the room where the patient sits. In a quarter of an hour after the application of two grammes to the skin, its elimination by the kidneys becomes manifest. The elimination reaches its maximum in from one hour and a half to four hours, and in twenty-four hours after the application only a trace can be found in the urine. The total quantity eliminated in this way may amount to about fifty-five per cent. of the total quantity applied to the skin.

Gonorrhœal Rheumatism and its Treatment. (*New York Medical Journal*, March 24, 1894.) By Dr. Ramon Guitéras.

In this paper the writer recommends the use of the salicylates during the first few days of the attack as decreasing the fever and the severity of the pains. After this its efficacy frequently ceases. Of the salicylates he rather gives the preference to salol as being more agreeable to take, and not giving rise to the nausea and gastric disturbances frequently accompanying the use of salicylic acid.

In the later stages he recommends colchicum combined with potassium iodide. Colchicum he thinks has a distinct action on the urethritis itself, as well as on the arthritis. Alkalies also have a double action, both antiblennorrhagic and antirheumatic, while also diminishing the activity of

the urine. He strongly advises the discontinuance of astringent injections, both anterior and deep, and the treatment of the blennorrhœa simply by internal medication,—copaiba, cubebs, and sandalwood. In case, however, any stricture is present internal urethrotomy is sometimes of distinct value. Sounds appear rather to aggravate than to benefit the condition.

Iodide of potassium is of value as an alterative when there is any thickening about the joint. In these cases counter-irritation is beneficial, and for this he strongly recommends ichthyol ointment fifty per cent. in lanolin as giving the best results. After the acute symptoms have passed away massage, electricity, and pressure by means of elastic bandages may stimulate absorption and thus hasten complete recovery.

A New Method of Administering Creosote. (*New York Medical Record*, March 10, 1894.) By Dr. R. W. Wilcox.

The writer states his belief that in creosote we have a very valuable remedy for pulmonary tuberculosis, but it requires to be administered in large doses, two to three drachms a day, which may give rise to untoward, even poisonous symptoms. In his experience guaiacol, even in doses proportionate to its percentage in creosote, is by no means equally efficient. Hitherto he has been most successful in the administration of creosote in the form of enteric pills, but even with these gastric irritations, backache, and malaise occasionally occur. Very lately he has used the carbonate of creosote, that is beechwood creosote (ninety-two per cent.), in chemical combination with carbonic acid (eight per cent.). It is a clear, pale, almost colorless liquid of syrupy consistence, becoming thinner by heat. It is insoluble in water, but soluble in alcohol, or in four to five parts of cod-liver or olive oil. It has a slight odor of creosote, and an oily, slightly tarry taste, which is in marked contrast to the burning taste of creosote. It can be administered clear or by hypodermic injection. Dr. Wilcox prefers its administration in either hard or soft gelatin capsules containing ten or twenty minims each. In large doses it may give a dark-green color to the urine, an indication to diminish the dose, but this is apparently the only untoward symptom. There is no malaise, nor irritation of the stomach or intestines. Dr. Wilcox thinks that fifteen to twenty drops per day is probably a sufficient dose for children, but adults may take one, two, or even four drachms per day in divided doses.

SURGERY.

IN CHARGE OF HENRY R. WHARTON, M.D.,

Demonstrator of Surgery and Lecturer on Surgical Diseases of Children in the University of Pennsylvania; Surgeon to the Presbyterian Hospital, the Methodist Episcopal Hospital, and the Children's Hospital; Consulting Surgeon to the Presbyterian Orphanage.

AND

JOSEPH P. TUNIS, A.B., M.D.,

Assistant Demonstrator of Surgery in the University of Pennsylvania; Surgeon to the Dispensaries of the Presbyterian, Methodist Episcopal, and Children's Hospitals.

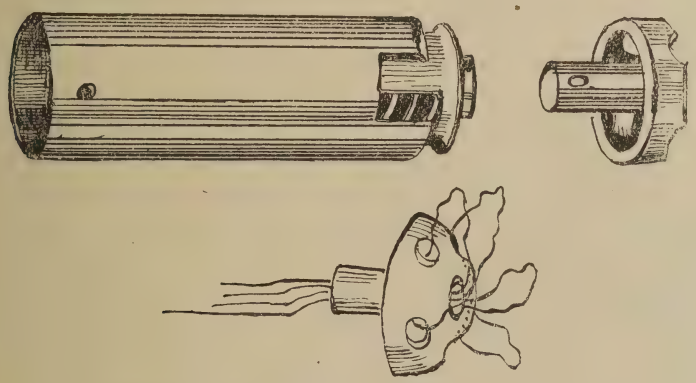
Operative Surgery of the Gall Tracts, with Original Report of Twenty Successive Cholecystenterostomies by means of the Anastomosis Button. (*Chicago Medical Recorder,* March and April, 1894.) By Dr. John B. Murphy.

This well-known surgeon contributes a valuable paper upon this subject, in which he summarizes the different methods of operation, and gives a detailed account of operation by means of the anastomosis button, and the results obtained in twenty cases.

The conditions of the gall tracts making laparotomy necessary are stated as follows: 1, cholelithiasis; 2, cholecystitis; 3, cancer of the pancreas; 4, neoplasms involving the ducts; 5, carcinoma of the gall-bladder; 6, traumatism.

He divides the operations into ten classes, and gives the indications for each individual operation, the method used, and its comparative value. Those operations in which Murphy recommends the use of the anastomosis

FIG. 1.



Drainage-tube button, showing half of the button threaded.

button are described in detail in this review. The series are mentioned in the following order:

1. Puncture of the gall-bladder.

2. Incision into the gall-bladder without further operative procedure. This operation is limited to those cases in which gangrene of the wall of the gall-bladder or adhesions around it prevent suturing to the abdominal wall

or approximating to the intestine and where drainage is necessary. The writer recommends the "button tube" (Fig. 1), and the operation is performed as follows: an incision is made in the abdominal wall in the usual position for operations on the gall-bladder, beginning at the ninth costal

Fig. 2.



Denans' rings of fifty years ago.

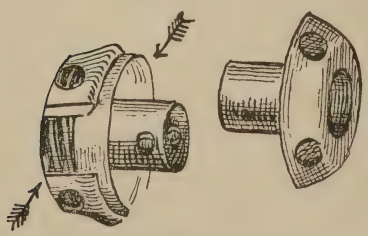
cartilage, parallel to the external border of the rectus muscle for a distance of two and one-half inches. The gall-bladder is located, a sufficient surface of its wall exposed, the contents aspirated, the purse-string suture inserted, the gall-bladder incised, male half of button inserted, purse-string tied and cut short, and the tubular portion of the button is then pressed into position; the tube is then drawn out as far as the gall-bladder will permit and held there with a pin passed through the openings in the side. During the time the pressure atrophy in the portion of the gall-bladder clasped between the two halves of the button is taking place, a cicatricial wall is being formed about the tube, which acts as the walls of a sinus after its production and insures continued protection to the peritoneal cavity.

3. Suture of the gall-bladder to the abdominal wall with secondary incision, cholecystostomy in two sittings.

4. Suture of the gall-bladder to the abdominal wall with immediate incision.

Murphy considers the anastomosis button as much safer than the suture, and the operation can be performed in much less time. "Half of the button is threaded by passing two pieces of surgeon's silk about eighteen inches long through the four drainage openings in the bowl of the button, each thread being passed through two of the openings nearest one another; the four ends are passed through the cylinder of the button, entering the cylinder at its junction with the bowl. By this means traction may be made and the two halves of the button approximated. The threaded half of the button is inserted in the gall-bladder in the same manner as in cholecystenterostomy; an artery-forceps is then pushed through the parietal layer of the peritoneum, one-half inch to the side of the incision, grasping the stem of the button inserted in the gall-bladder, and drawing the stem through the opening made by the artery forceps; pass the traction cord through the other half of the button, draw

Fig. 3.



Anastomosis button.

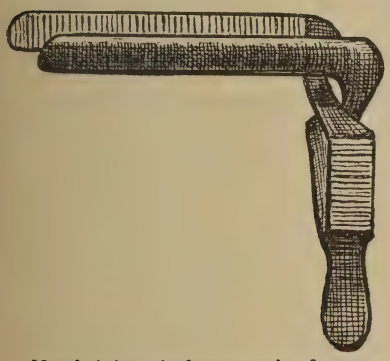
the button together, and remove the threads. Sew up the opening in the peritoneum with catgut."

5. Incision of the gall-bladder, removing its contents, suturing it to the abdominal wall with immediate extraperitoneal suture of the incision made in the gall-bladder.

6. Incision of gall-bladder with immediate suture and reposition into abdominal cavity.

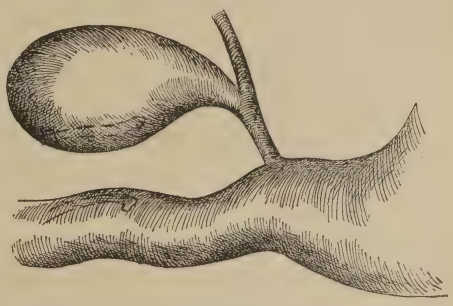
7. Cholecystenterostomy, gall-bladder and intestinal anastomosis. The difficulty of this operation, when performed by means of the suture, called the attention of the author to the subject, and he invented and perfected the anastomosis button (Fig. 3). After making an incision from the edge

FIG. 4.



Murphy's intestinal compression forceps.

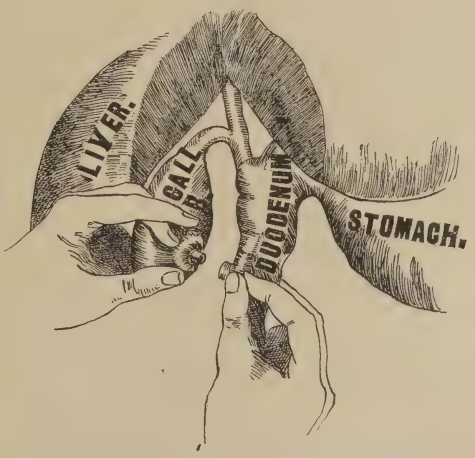
FIG. 5.



Running threads in position in gall-bladder and duodenum.

of the rib downward for three inches, the gall-bladder and duodenum are drawn into the wound. The duodenum is cleared of its contents by pressure with the fingers, and Murphy's intestinal compression forceps (Fig. 4) are placed upon it to prevent the escape of gas and fluids. The button is then inserted in the following manner: A running thread is inserted in the duodenum opposite the mesentery and around the portion intended for incision. A similar thread is placed in the gall-bladder (Fig. 5). An incision is then made in the intestine, the button is slipped in and the string tied. The gall-bladder is aspirated, incised, and the button tied in. Each half of the button is held between the fingers and pressed together so as to bring the surfaces firmly in contact and compress the tissues (Fig. 6). The atrophy produced by the

FIG. 6.



Approximation of the two halves of the button.

pressure of the spring-cup leaves an opening large enough to allow the cup to drop into the bowel, and it is passed through the intestine.

8. Cholecystectomy. Total extirpation of the gall-bladder.

9. Choledocholithotripsy, or crushing of gall-stones in the choledochus.

10. Choledocholithectomy, with subsequent suture of duct.

In this series of operations the greatest mortality is found in cholecystenterostomy in one sitting by means of the suture, in which thirty-five per cent. of the cases terminated fatally. The success of cholecystenterostomy by means of the anastomosis button is seen in marked contrast in twenty operations for the relief of cholelithiasis, with twenty recoveries,—one hundred per cent.

The Forms of Peritonitis, their Relation to Appendicitis, and the Etiology of each. (*Medical Age*, January 25, 1894.) By Roswell Park, A.M., M.D., of Buffalo.

This writer considers that failure of diagnosing the lesion of appendicitis is best explained upon the following grounds:

1. To the very common and early diffusion of pain with which many of these cases begin, even those where the phenomena subsequently become strongly localized. This is not always due to ignorance on the part of the patient, for many intelligent people are unable to indicate the place where they first feel the pain of which they so bitterly complain.

2. To the frequent insidiousness of the disease itself, and especially in many of those cases in which pus forms.

3. To carelessness in the first examination, and to failure to appreciate the real nature of the lesion in true appendicitis. This is purely a matter of ignorance, and concerns mainly those men—their number very rapidly diminishing—who diagnosticate all these cases as inflammation of the bowels.

4. To failure to recognize the induration or tumor in the right ileo-cæcal region, which failure may sometimes be well excused because of the distention of the abdomen, the acute sensibility of the part, and the pain which the slightest manipulation produces; in other words, to the impossibility of proper examination.

5. To the fact that some of these cases present, almost from the outset, common signs and symptoms of primary obstruction of the bowels, and that the diagnosis once made by the attendant is not altered to suit the other aspects of the case as they develop. This surgeon thinks that we must have charity for those who make this mistake, because to his knowledge it has been made by good and competent general practitioners.

Dr. Park has learned to believe that,—

1. There is no such thing as idiopathic peritonitis. Every so-called case has a definite origin, which, however, it may not be always possible easily to determine.

2. Many cases of non-traumatic peritonitis have their origin in the

female pelvic organs, and are usually caused by the staphylococcus and streptococcus; but some of them are really cases of colon infection.

3. Those cases which depend upon perforation after ulceration, escape of gall-stone into the peritoneal cavity, and lesions of this general nature fall into the septic or putrid forms.

4. Peritonitis due to internal obstruction or strangulated hernia is usually due to infection by the colon bacillus.

5. Cases of peritonitis which do not originate in the manner already referred to, almost invariably proceed from the appendix vermiformis, and of all these a larger proportion are cases of pure infection by the colon bacillus.

6. The larger proportion of these are fatal unless surgical procedures are used.

7. In every case of peritonitis for which obvious cause is lacking, the ileo-cæcal region should be carefully examined, if suspected, should be explored, and this exploration may well be made under an anæsthetic with all conveniences at hand for the most formidable kind of operative procedure.

OBSTETRICS AND GYNÆCOLOGY.

IN CHARGE OF RICHARD C. NORRIS, M.D.,

Demonstrator of Obstetrics in the University of Pennsylvania; Physician to the Preston Retreat; Consulting Obstetrician and Attending Gynæcologist, Southeastern Dispensary and Hospital for Women and Children.

Vesico- and Recto-Vaginal Fistulæ. (*Brit. Med. Jour.*, February 24, 1894.) By A. H. Ferguson, M.D.

Vesico-vaginal fistulæ: The author's method is as follows: The fistulous opening being exposed, an incision is made through the mucous membrane of the vagina at the distance of a full eighth of an inch from the margin of the fistula: this incision is extended till it completely encircles the opening. The line of incision is carefully deepened till the lining membrane of the bladder is reached, and great caution is exercised in retaining the integrity of that membrane. A stream of sterilized water directed on the wound keeps it free from blood. In this manner a circumferential flap, hinged by the mucous membrane of the bladder, is obtained. This flap is inverted into the bladder, thus forming a roof for the broad, raw surface exposed, and it is held in such position by a continuous suture of fine chromic catgut, inserted in such a manner that the stitches do not pierce the wall of the bladder. This closes the opening by a strong flap, and the operation is completed by placing sutures that do not include the mucous membrane of the bladder.

The vagina is packed with iodoform gauze. This is renewed at the end of eight days, and such of the catgut stitches as are ready to come

out may be removed from the vaginal surface, followed by irrigation and repacking. All the sutures need not be removed, and should remain until fibrous tissue is fairly formed, unless they are easily moved in their positions. Union by first intention will follow this operation if thorough antisepsis be maintained.

The advantages claimed are: No loss of tissue; a very broad raw surface is obtained for apposition.

There is a projection into the bladder that prevents the trickling along the sutures, and, if the mouth of a ureter is exposed at the edge of the fistula, it is not injured, but merely turned into the bladder. Secondary hemorrhage into the bladder is obviated.

The author applies a similar method to recto-vaginal fistulæ; the part turned into the rectum is, however, clamped with a pile clamp and burned off with the actual cautery. The clamp remains in position till the sutures are placed in the vagina, the mucous membrane of the rectum being avoided. The dressings are a rectal tube surrounded by iodoform packing and a pack in the vagina.

The vesical operation has been successfully performed three times by the author, the rectal operation once, with perfect results.

Erysipelas and Gonorrhœa. (Erysipel und Gonorrhoë. *Centralblatt für Gynäkologie*, No. 39, 1893.) By Dr. Alexander Schmidt.

An interesting case of gonorrhœa, in which a superadded attack of erysipelas apparently displaced or cured the patient of the former trouble, is reported by this author. The patient, a girl of three years, came under his care for the treatment of gonorrhœa of the vulva. On the third day there appeared on the left thigh and gluteal region a typical erysipelatous patch that was separated by about two fingers' breadth from the vulva. Immediately the temperature rose, and the purulent secretion decreased. The erysipelas spread over the lower extremities, and passed away after a week. The inflammatory condition of the vulva and urethra passed away the second day after its appearance, and did not return.

Three New Cases of Cæsarean Section, Successful both for the Mothers and Children. (Trois nouvelles Opérations césariennes conservatrices, pratiquées à la Maternité de Liège, avec Succès pour la Mère et l'Enfant. *Bulletin de l'Académie Royale de Médecine de Belgique*, July, 1893.) By Dr. N. Charles.

The author reports three successful operations of Cæsarean section in support of his belief that laparotomy is indicated when one cannot expect to obtain by natural channels, with or without symphysotomy, a living child and one that is viable. He also reports a case of Cæsarean section upon a primipara for uræmic dyspnœa in the eighth month. The patient died eight days after the operation from anuria and toxic encephalopathy.

The author comes to the following conclusions: 1. The operation is not

difficult, and can be performed by all good operators. 2. With thorough antiseptic precautions it has all the chances of success, unless the patient is seriously ill, as with eclampsia, uræmia, rupture of uterus, extreme exhaustion, or collapse.

Regarding *technique*, he summarizes as follows: 1. It is necessary to make the incision over the fundus and the superior portion of the uterus. In order to attain this, the middle of the incision should correspond to the umbilicus. 2. Abdominal preventive sutures and elastic ligatures about the pedicle of the uterus are useless. 3. The harmlessness, the rapidity and facility of opening the uterus with the fingers after a superficial incision. 4. The usefulness of the manœuvre of Gueniot to produce evacuation of the uterus during the delivery of the child. 5. The uterine wound is easily brought together, especially if after the insertion of the deep sutures the serous sutures are placed according to the method described by Sänger.

Superfœtation. (*Charlotte Medical Journal*, January, 1894.) By E. C. Boyte, M.D.

The author reports an interesting case by which the "inadmissible hypothesis" of superfœtation was proved to be possible and true. After delivering a woman of a child at full term, he proceeded to expel the placenta by Credé's method. There came away with it, in a separate sack, a fœtus three or three and a half months old. The two placentæ were apparently attached to each other at their margins by a substance resembling the jelly of Wharton. The placenta and fœtus were in a healthy condition, and the circulation was independent, as there was no anastomosis between the vessels.

NEUROLOGY.

IN CHARGE OF CHARLES W. BURR, M.D.,

Pathologist to the State Asylum for the Insane, Norristown; Visiting Physician to the Home for Incurables; Visiting Physician to St. Joseph's Hospital, Philadelphia, Pa.

An Enormous Cerebral Tumor. (*New York Medical Journal*, November 4, 1893.) By William E. Conroy, A.M., M.D., of Saginaw, Mich.

The author reports a case of enormous tumor which was diagnosed and operated upon. The patient made an operative recovery, though the tumor was not removed at the operation. The patient died, however, the heart's action beginning to fail on the second day, while death occurred, painlessly, forty-eight hours after operation. The autopsy revealed a tumor filling nearly the entire left half of the cranium, and resembling strongly in its lobulations the normal hemisphere. The tumor was invested with a closely-adherent, tough, fibrous membrane, which sprang from the falx cerebri. There were no other attachments. The left hemisphere was compressed upon the base of the skull to the size and shape of the palm of a man's

hand. Removing this and the right hemisphere, two smaller tumors were found on either side of the foramen magnum, attached to the dura of the medulla oblongata. The main tumor weighed one pound and eleven ounces avoirdupois. Its longest diameter antero-posterior was eight inches; transverse, three inches and a half; and from the surface to the base, four inches. The microscopical examination revealed only fibrous structure with foci of fatty degeneration.

Dementia Paralytica in the Negro. (*Johns Hopkins Hospital Bulletin*, October, 1893.) By Henry J. Berkley, M.D.

The author distinguishes in his classification three groups: 1, The most common type, in which delusions of grandeur or of expansive delirium were present; 2, that in which excitement and depression alternated, the patient being one day possessed of great wealth, and the next plunged into a very abyss of despair; and 3, that in which the mental powers became gradually enfeebled, and the patient remained childish (in one case over two years) until cut off by an intercurrent malady. The most characteristic symptom of the disease in the negro has been the extreme rapidity of the mental enfeeblement, in which he permanently remains, while the other characteristics continue until death ensues. The cause of the frequency of this disease in this race he assigns to the altered condition of living, from being cared for, to the present struggle for individual existence. The presence of arterio-sclerosis in most of the cases was noteworthy, but is of such an every-day occurrence that no particular stress can be laid upon it. The microscopical examination showed a widely pervading cell-degeneration of a granular, probably fatty, type, presenting some variations in extent and appearance in each case. Besides the cellular changes, there has been some overgrowth of the connective-tissue structures within the cerebral substance, and a very diffuse inflammatory change around the sheaths of the blood-vessels, with slight alterations in the sheaths themselves. The author believes it probable that the beginning of the disease is some alteration of the blood-supply, followed by a peri-arterial lymphoid growth, disturbance of lymph-currents, consequent malnutrition of nerve-structures, followed by degeneration, atrophy, disorganization, and an overgrowth of spider-cells, with other fixed cell-proliferation. Then come serous and sanguineous apoplexies.

The Treatment of Exophthalmic Goitre. (*Medical News*, December 16 and 23, 1893.) By J. Madison Taylor, M.D., of Philadelphia.

This author considers exophthalmic goitre to be much less rare than is generally believed, and that it is also far more amenable to treatment than is generally taught. Unless there coexists structural disease, excellent results—in most instances a practical cure—may be looked for if the treatment be persistently and systematically pursued. The treatment he would advise is of course modified by the conditions present, but when possible, absolute

rest in bed for a time is indicated. A tranquillizing diet, such as milk, is usually of use to bring the disturbed circulation as soon as possible to the normal. This diet may be amplified by foods judiciously selected, having regard to the depression of nutrition that may exist.

The diathetic element that may be back of the disorder needs careful consideration; in some of his cases it was found to be lithæmia. Care of the skin is necessary, as salt baths given to the patient in bed,—a tablespoonful of salt in a basin of water followed by a brisk rub,—often giving a little fluid nourishment. This may be repeated at night, or an aromatic vinegar may be used for bathing if the skin shows a tendency to leak. Massage may be used; dry powders on the hands of the masseur, such as talc or lycopodium, ease at first the action on the skin. Wool or silk should always be worn next the skin, as it prevents surface chill, and where there is much surface exudation the underwear should be changed frequently, several times a day even, with a brisk dry-rub each time. Ice applied to the præcordium is the most certain and steady method of relieving the tumultuous heart, steadying its beat and lowering the whole cardio-vascular excitation. Care is needed, however, in using such a powerful agent. Ice-bags over the spinal region may exercise a similar influence. Galvanization, though useful in some cases, is not a panacea. Many drugs have been used as vascular tonics. The author has seen very good results with digitalis, though found insufficient by some. Strophanthus seemed to do better. Sparteine sulphate may be more effective, but the one drug that has served him best of all, and which modifies most markedly the discomforts and danger of this disorder, is hyoscine hydrobromate. It calms the mind and body, arrests over-secretion of the skin without drying the throat, and relieves the chilliness by preventing surface moisture. Many tonics are useful, regard being had to their several indications. Change of scene, environment, and employment are useful. The author gives detailed histories of eleven cases.

OPHTHALMOLOGY AND OTOLOGY.

IN CHARGE OF J. E. HARPER, A.M., M.D.,
Chicago, Illinois.

Traumatic Deafness. (*New York Medical Journal*, November 11, 1893.) By W. H. Bates, M.D.

The writer reports a case of traumatic deafness in which both drum membranes were ruptured by an explosion of dynamite. The tuning-fork test showed symptoms of nerve deafness. By careful cleansing of the middle ear, politzeration, and the use of general tonics, the patient's hearing became more acute than before the injury, possibly from the fact that the cicatrix tightened the drum membrane. A number of persons injured to about the same degree, who were not treated, did not recover their hearing.

Chronic Retro-Bulbar Neuritis. (*Amer. Pract. and News*, January, 1894.) By W. Cheatham, M.D.

The author writes that "it is not the periodical drunkard who is liable to suffer from this trouble, but the sipper or steady drinker, more often the fellow who never gets drunk. The disease is more common in the male than the female, in the old than the young, for reasons easily understood." It has been stated that it does not occur in persons under twenty years of age, yet the writer now has a patient under treatment who is only sixteen years old; cause, the abuse of tobacco and beer.

Quinine in Diseases of the Ear. (*Lancet Clinic*, December 16, 1893.) By W. Cheatham, M.D.

Attention is called to the fact that in all reported cases of permanent deafness attributed to quinine, other factors of importance were found. He doubts whether quinine alone can destroy the hearing permanently. In some cases of suppuration of the middle ear he finds quinine a necessity. The writer relates a case in which there was severe pain in the right ear, the drum-head was bulging, the auditory canal swollen, with œdema over the mastoid, and a temperature of 103° F. Leeches and dry heat with puncture of the drum-head were practised several times with only temporary relief, an exacerbation of the symptoms returning every other day about 5 P.M. Twenty grains of quinine were then given every other day for several days, in doses of five grains every two hours, the last dose at 4 P.M. The symptoms improved rapidly under this treatment, but returned with increased severity when the quinine was discontinued. It was then given for some days and the patient made a good recovery. The author has seen three similar cases, but none so severe as this one.

The Pernicious Influence of Albinism Upon the Eye. (*Journ. Am. Med. Assoc.*, November 4, 1893.) By George M. Gould, M.D., of Philadelphia.

The following conclusions are given by Dr. Gould in regard to this condition:

1. Albinos are normally and even exaggeratedly healthy in body and mind.

2. There is no discoverable influence of heredity in the cause or transmission of the peculiarity.

3. The sole pathological influence of albinism is upon the eye.

4. The ocular evils, photophobia, nystagmus, ametropia (especially high degrees of hyperopic astigmatism), and amblyopia, are directly and indirectly caused by the transparency of the iris.

5. The *modus operandi* of this etiological factor lies, *a*, in the brilliant and diffuse illumination of the fundus of the eye by the non-exclusion of the peripheral rays of light by the faulty diaphragm, producing photophobia; *b*, the lid and muscular pressure upon the globe resulting from the

attempt to exclude the light, produce the refractive anomaly; *c*, the effort of the groping eye to localize and definitize the evanescent and indistinct image produces the nystagmus; *d*, and the amblyopia is a necessary consequence of all these combined factors.

6. Proper correction of the ametropia lessens eye strain, lessens photophobia, and increases the power of near-range vision.

7. True prophylaxis and cure must look to the pigmentization of the iris, or to the construction of an artificial opaque substitute for natural faulty irides.

8. The younger the age at which any prophylaxis or treatment is begun, the more promising will be the results.

Spasm of the Accommodation. (*Memphis Medical Monthly*, January, 1894.) By E. C. Ellett, M.D.

This writer gives an outline of this condition. He says that the first thing is to secure thorough paralysis with a mydriatic (he thinks that refraction should always be done with a mydriatic). He then tests each eye separately, to ascertain that the ciliary muscle is thoroughly paralyzed in both. The refraction being determined, suitable glasses are ordered for constant use. If, when the mydriasis passes off, the trouble returns, atropine should be again instilled, and its influence maintained until the spasm is permanently relaxed. The writer has known of but one case in which this treatment failed. He mentions two cases reported by Donders in which atropine was used several months before a cure was effected.

Treatment of Corneal Ulcers. (*Journ. Am. Med. Assoc.*, November 4, 1893.) By William C. Banes, M.D.

In a paper presented to the Section of Ophthalmology of the American Medical Association, Dr. Banes gives a summary of the treatment of the various forms of this troublesome affection, from which the following points have been selected.

The first indication is to place the eye at rest. In young subjects the accommodation should be paralyzed with atropine and, in all cases, excepting perhaps the superficial phlyctenular ulcer, a protecting compress should be worn.

Hot water can be applied to the eyelids and brow, or directly to the ulcer by means of a dropper. An application for ten or twenty minutes every one or two hours aids very materially in relieving the pain and congestion. In persons over twenty-five years of age atropine should be used in weak solution; eserine in one-fourth- to one-half-grain solution contracts the vessels, relieves the congestion, tension, and pain.

Locally, after clearing the ulcer of the detritus under cocaine, the application of dry boric acid, aristol, the yellow ointment, ten-grain solution of nitrate of silver, or the liquid carbolic acid will do excellent service in all except deep and rapid ulcers, where the actual cautery or galvano-cautery

is the more reliable for destroying the unhealthy tissue and stimulating healing. When dacrocystitis exists, it is essential that the sac be irrigated with an antiseptic solution, such as the bichloride of mercury (1 to 5000), once or twice daily. In cases where perforation is threatened and pus has been deposited in the anterior chamber, paracentesis should be performed.

Ripening of Immature Cataracts. (*Journ. Am. Med. Assoc.*, November 4, 1893.) By Boerne Betteman, M.D.

Dr. Betteman in this article presents the results obtained during six years by his method of making an incision in the cornea with a keratome, guarding the iris with a properly shaped spatula and with another spatula, introduced through the wound, stroking the lens from six to twelve times.

He made the following deductions: 1, Artificial ripening of cataracts is in properly-selected cases demanded; 2, direct trituration is preferable to other methods; it is easily performed by one possessing ordinary skill; 3, it is not followed by any untoward symptoms, consequently it is a safe and reliable procedure; 4, it is not indicated where sclerosis involves the bulk of the lens; 5, it is especially useful in senile cataracts with soft cortex; 6, the results of the massage are marked and rapid; 7, maturity of the cataract is usually induced in three weeks, often sooner; 8, very little discomfort is caused the patient aside from bandaging the eye two days; 9, at the subsequent extraction of the lens, the cortical substance is readily removed and dangers of iritis and suppuration of the corneal wounds are lessened.

DISEASES OF THE LARYNX, NOSE, AND SURROUNDING STRUCTURES.

IN CHARGE OF J. PAYSON CLARK, M.D.,

Physician for Diseases of the Throat, Massachusetts General Hospital; Physician to the Throat Department, Boston Dispensary.

Two Cases of Nasal Tuberculosis. (*New York Med. Journ.*, November 4, 1893.) By J. W. Farlow, M.D.

In the first case there was an ulceration on the left septum and an irregular, easily-bleeding, reddish mass on the upper part of the left inferior turbinated bone. Examination of the chest was negative. Syphilis was excluded. Astringent applications reduced the vascular mass, but a marked ulceration in the turbinate remained. The curette, lactic acid, and the cautery were employed in treatment. The septal ulcer has remained healed for five months, but that on the turbinate tends to reappear in a new place. Examination of crusts for bacilli was negative.

In case two there was a mass of soft tissue in the right nostril which microscopic examination showed to be tubercular. Later soft red growths were removed from both sides of the septum which had microscopically the

structure of miliary tubercle. No tubercle bacilli were found. There was also an eruption on the face, probably tuberculous.

Membranous Adhesions of the Vocal Cords. (*Pester Mediz.-Chirurg. Presse*, October 1, 1893.) By H. Halasz.

The patient, a man of thirty-five years, had become hoarse after an attack of typhoid fever a year previously. When seen was suffering from dyspnœa and aphonia and had had several attacks of suffocation. The vocal cords were found grown together by quite a firm membrane except for a small oval opening at their posterior ends. This membrane was divided under local anæsthesia with a concealed laryngeal knife. A catheter was then introduced to dilate the glottis. After-treatment consisted of alum inhalations. The patient obtained a good voice.

Contribution to the Study of the Function of the Crico-Thyroid Muscle. (*Revue de Laryngol. et d'Otologie*, September 15, 1893.)—Irritation of the nerve (the external branch of the superior laryngeal) supplying this muscle or the muscle itself causes the cords to come into the median position. The cords in the cadaveric position naturally approach the median line when stretched. This the crico-thyroid muscle does. At the same time the soft parts between the vocal cords and the plates of the thyroid cartilage are pushed upward and inward, pressing the cords inward. Dr. Onodi concludes from his experiments that section of the inferior laryngeal nerves does not determine the median position when the trachea is open; that the median position is produced when the trachea is closed; that the median position obtained is only of short duration not lasting a great number of days; that it can be provoked for several minutes reflexly through the nerves of the skin. Two factors, therefore, are necessary for this phenomenon, the action of the crico-thyroid muscles and the negative pressure of air in the trachea.

Diphtheria and other Membranous Affections of the Throat. (*Am. Journ. of Med. Sciences*, November, 1893.)—In ninety-three of the cases in the following table, Dr. F. H. Williams made the diagnosis with the aid of cultures. In three cases cover-glass preparations only were made:

	Cases.	Recovered.	Died.
Diphtheria	40	20	20
" and scarlet fever	12	6	6
" " measles	1	1	...
" " typhoid fever	1	1	...
Pseudo-diphtheria	19	17	2
" and scarlet fever	23	18	5
	96		

In forty-nine cases preliminary cover-glass examinations were made. In thirty-eight the cultures and cover-glass examinations agreed, in seven disa-

greed, in two the result of the cover-glass examination was doubtful. An interesting analysis of the reported cases is given, also an account of the treatment.

Summary.—1. The necessity of cultures as a means of early diagnosis.

2. The coincidence of diphtheria and other diseases.

3. The bacteriological examination of all patients ill with scarlet fever, typhoid fever, measles, or other diseases, who have membranous throats.

4. The bacteriological examination of specimens from the throats of all diphtheria patients before isolation is ended.

5. Seven and one-half (known at present in the United States as fifteen) volume solutions of peroxide of hydrogen are weak germicides.

6. The advantages of strong hydrogen peroxide solutions locally in diphtheria. The substitution of harmless and more efficient for harmful or inefficient local treatment.

7. The importance of frequent early local applications.

Tuberculosis of the Nasal Mucous Membrane, with a Report of Ten New Cases. (*Am. Journ. Med. Sciences*, December, 1893.)—Dr. Maximilian Herzog gives a very thorough review of this subject and tabulates eighty cases, including ten previously unpublished. His conclusions may be thus briefly stated:

1. Tuberculosis of the nasal mucous membrane is not as rare a disease as formerly supposed.

2. It is generally a secondary affection.

3. It is frequently secondary to pulmonary and laryngeal phthisis.

4. It occurs in the form of ulcerations, tumors, and a combination of both.

5. It occurs most frequently between ten and forty years of age.

6. It does not show any predilection as to the sex.

7. Its seat is preferably the septum cartilaginum.

8. Its course is very chronic.

9. It is, *per se*, not dangerous to life, but may eventually lead to fatal complications.

10. One of its most important direct complications by continuity is that with tuberculosis of the naso-lachrymal duct and the conjunctiva.

11. It may be complicated with tuberculosis of the pharynx, palate, tongue, skin, lupus of nose, tuberculosis of the cervical glands, etc.

12. Lupus of the face, or of the nasal mucous membrane, may lead to tuberculosis of the nasal mucous membrane.

CLIMATOLOGY.

IN CHARGE OF GUY HINSDALE, M.D.,
Lecturer on Climatology in the University of Pennsylvania, Philadelphia.

Healthfulness of Minneapolis and St. Paul. (*Medical Record*, April 28, 1894.) — In explanation of the small death-rate of these cities it is stated that:

"The drainage is perfect, the water-supply abundant and of the best, malaria is unknown; phthisis and other diseases that fasten upon particular localities are rarely found here, except as importations; zymotic diseases, when they occur, are, as a rule, of mild type, the malignant forms appearing but rarely; and the worst features of the climate, that is its extremes of heat and cold, are more trying to the nervous system than injurious to the general vitality. In fact, the only diseases that prevail here to an average extent are those with which climate has little to do, such as the diarrhœal diseases of children, cancer, the accidents of childbed, and the like."

Hygiene and Diseases of Warm Climates. Edited by Andrew Davidson, M.D., F.R.C.P. (Ed.). Young J. Pentland, Edin., 1893. pp. 1000.

This work, devoted to tropical hygiene and pathology, consists of contributions from sixteen authors. The chief maladies of warm climates—malarial fever, dysentery (including tropical diarrhœa) and hepatitis, cholera, yellow fever and plague, leprosy, and beri-beri—are thoroughly treated. The authors are chiefly army and navy surgeons, and include George M. Sternberg, surgeon-general U.S.A.

Beri-beri is fully treated, and is held to be the result of the action of some specific agent on the human body. "It cannot be the result, as has so often been vaguely asserted, simply of heat or cold, damp or drought, too much of one element of food or too little of another. Such conditions are met with everywhere and anywhere. But we know that beri-beri can be acquired only in particular places, and, as far as known, is never met with unless in individuals who live in these places or have visited these places. When a healthy seaman visits a kakké port in Japan, or a healthy Dutch soldier is landed at Atcheen, or a healthy criminal is lodged in an Indian jail, and by and by becomes beri-beric, it is not because of any unusual exposure to heat or cold, dampness or dryness, nor of unphysiological feeding that he sickens; it is simply that he has had an opportunity of absorbing in these places a specific poison." The doctrine of the microbic origin of beri-beri is fully discussed.

Sanitary Topography, Climate, and Mineral Springs of New Jersey. (*The Sanitarian*, May, 1894.)

Dr. A. N. Bell says that the Palisades, "notwithstanding their charming appearance as viewed from the Hudson, are well known to be malarious.

This condition is due to the accumulation of stagnant water and to the decomposition of the vegetable *débris* which it holds, washed into the undrainable fissures of the trap-rock formation of that region at every rainfall." Dr. Bell appends the analysis of Schooley's Mountain spring; Warwick Spring at Newark, Essex County, a calcic and magnesic carbonate; a strong saline artesian well at Paterson; a calcareous well at New Brunswick, and an alkaline well in Jersey City.

ORTHOPÆDICS.

IN CHARGE OF REGINALD H. SAYRE, M.D.,

Assistant to the Chair of Orthopædic Surgery, Bellevue Hospital Medical College, New York.

Rupture of the Ligamentum Patellæ. (*New York Medical Record*, May 12, 1894.)—At the International Medical Congress just held in Rome, Dr. Fenaresi described an operation for the relief of this condition. He resected a strip four inches long, one inch broad, and one-fifth of an inch thick from the median tendon of the quadriceps muscle, leaving it attached by its upper extremity. He then divided and stripped back the periosteum of the patella, and cut a groove in the bone to accommodate the tendon, attaching the lower end of this to the ruptured ligament, and then suturing the periosteum over it. In case the ligament was torn from the tuberosity of the tibia, he sutured the dissected tendon directly to the tibial periosteum. The same procedure could be employed in the treatment of fracture of the patella, only in this case the fibres of the tendon ought to be spread out so as to cover the anterior surface of the patella, and be attached to the insertion of the ligament into the lower fragment of the fractured bone. A similar method might be used in cases of fracture of the olecranon process, the tendon of the triceps being dissected in the same way.

Ingrowing Toe-Nail; Cotting's Operation; Thiersch Skin-Grafting on the Second Day; Complete Healing in a Week. (*New York Medical Journal*, May 19, 1894.) By Sinclare Tousey, M.D.

Cocaine is injected hypodermically, and no constriction made about the toe. The scalpel is held vertically, with its edge forward and its point at the side of the nail close to the matrix, and is pushed vertically completely through the toe close to the side of the nail; then, with a sawing motion, the knife is carried forward, converting the part of the toe external to the nail into a flap. The edge of the knife is then turned backward, and the flap completely reversed by an oblique cut outward and backward.

The nail is not cut at all and the matrix is not even exposed; but we have hollowed out the side of the toe so that the nail projects at all points

beyond the flesh. The area thus denuded is of about the size of a quarter of a dollar, and in Cotting's operation is left to heal by granulation. Complete cicatrization takes at least three weeks, and the surface requires a protective dressing for a week or two beyond that.

This has led Dr. Tousey to modify Cotting's method by using the Thiersch method of skin-grafting. It is impracticable to do this at one sitting, as there are two or three spurting arteries and the capillary hemorrhage is very free and persistent. He therefore applies iodoform gauze and very firm pressure with cotton and a bandage to arrest hemorrhage, without using a single artery clamp, and does the grafting two days later.

The gauze is softened by soaking with sterilized salt solution, and is gently removed without occasioning hemorrhage. The graft is cut without the necessity of an anæsthetic, local or general. The dressing has consisted of rubber tissue and gauze moistened with sterilized salt solution (0.6 per cent.), and has been changed every other day for a week, at the end of which time the surface has been found healed and a protective dressing of subnitrate of bismuth and gauze used for another week. The author prefers this operation to that of Augier, where a section of the side of the nail and corresponding portion of the matrix are excised, and the wound closed by sutures. He has done thirty operations in all, with only one failure, this being a case in which Augier's operation had previously been done and when he was obliged to practise evulsion of the nail later on.

The Proper Direction of the Great Toe. (*New York Medical Journal*, May 19, 1894.)—At a recent meeting of the Paris Société de Biologie, a report of which appears in the *Progrès Médical* for April 21, Félix Regnault presented the abstract of an essay of his which is to appear complete in the proceedings of the Société d'Anthropologie. The direction of the great toe, according to Regnault, varies according to the way in which the foot is managed. Persons who habitually hold objects between the first and second toes have the great toe pointing inward in relation to the axis of the body. Narrow shoes, on the contrary, push the great toe outward. In persons who go barefooted and use their feet only for walking, anthropologists and physicians are agreed, up to the present time, that the great toe and inner border of the foot form a straight line.

From numerous examinations it has been ascertained that in persons who have never worn shoes the great toe is in a state of slight adduction (the abduction of the French). Of thirty-six natives of Dahomy, who use the foot as a prehensile organ, sixteen had the toe pointing inward, six had it pointing straight forward, and fourteen had it directed outward. A few little barefooted children observed at Kehl showed slight adduction. Finally, numerous photographs preserved by the Société de Géographie show how frequent this adduction is among people who use their feet as prehensile organs and go barefooted. In the new-born, the great toe is really parallel with the axis of the foot, but as soon as they begin to walk it is directed a

little outward. It results from this that the rectilinear inner border of the so-called "national" shoe is in reality defective. All races have employed shoes with the inner border a little convex. This is seen in the footgear of the Chinese, and of the ancient Greeks, Romans, Gauls, and others. The important thing is not to exaggerate the curve in accordance with the demands of fashion.

DERMATOLOGY.

IN CHARGE OF W. A. HARDAWAY, A.M., M.D.,
Professor of Skin-Diseases in the Missouri Medical College, St. Louis.

ASSISTED BY

C. F. HERSMAN, A.M., M.D.,
St. Louis.

An Erythema of Lepra containing Giant-cell-like Structures.—Montgomery (*Medical News*, April 14, 1894) reports the case of a young man who had seven years before the first manifestations of his malady resided in the Sandwich Islands. Two years before he came under observation a small red pimple had appeared over the left malar bone. When examined there was in this region a plaque of reddish-brown skin with steep borders as large as a fifty-cent piece. Over the anterior surface of the lower third of the right radius there was a red desquamating patch as large as a silver dollar. There was no atrophy nor any fibrillary twitching of the muscles. The ulnar nerves could be felt distinct and hard as they passed over the internal condyles. There was analgesia but no anæsthesia of the patches. The temperature sense in the patches was diminished. Eyesight, smell, taste, and hearing were normal and the tendon reflexes were natural.

A section was cut from the patch on the face, but, though carefully examined, no lepra bacilli could be found. This is not to be wondered at, even if the diagnosis of leprosy was correct, as it is often impossible to demonstrate them. The unusual part of the microscopical finding was the presence of giant-cell-like bodies. These were not exactly like the giant cells of Langhans, as they were more circular and presented at the periphery usually a single row of round nuclei. Hansen thought that these structures were probably capillary blood-vessels, the nuclei of which were undergoing proliferation. The author agrees in this opinion.

An Unusual Case of Alopecia.—Rogers reports an unusual case of alopecia in the *British Medical Journal*, April 28, 1894. The alopecia began as a patch the size of a penny on the right parietal region. Under treatment a new growth of hair soon occurred. A thinning of the hair around the new hair then commenced and has extended till now the patient

presents the unusual appearance of a tuft of natural hair where the alopecia originally was, connected to a band of natural hair running from ear to ear, while all the rest of the hair is thinned.

Lupus Erythematosus as an Imitator of Various Forms of Dermatitis.—Crocker read at the seventeenth meeting of the American Dermatological Association a paper with the above title. He referred to the fact that syphilis, eczema, and scabies are well known for their polymorphism, and drew attention to the fact that lupus erythematosus is but little behind them as an imitator of other diseases. As usually seen the disease is a scaly and often a crusted affection, but there are cases in which the surface of the skin is undisturbed, and red, elevated, smooth, shining lesions are presented which resemble erythema multiforme. The author also related cases which resemble psoriasis, lichen planus, and lupus vulgaris.

The last case is especially interesting. There are more and more cases accumulating which form, so to speak, connecting links between what has always been termed lupus erythematosus and lupus vulgaris. There can be no doubt that many cases which have been from time to time reported as unusual cases of lupus erythematosus have in reality been tuberculosis of the skin. A case was recently reported by one of the editors of this department (*American Journal of the Medical Sciences*, April, 1894) which in many of its aspects resembled lupus erythematosus, yet in this case the tubercle bacilli were demonstrated. It seems very probable that the term lupus erythematosus has been often used to cover a number of affections pathologically different but clinically similar.

Dermatol in Dermatology.—Cantrell (*Therapeutic Gazette*, April 16, 1894) thus sums up his opinion of the efficacy of dermatol in the treatment of skin diseases:

1. It is not superior to other iodoform substitutes, such as iodol and aristol. 2. It does not hinder discharge; on the other hand, it increases it. 3. It is decidedly irritating. 4. It is a stimulant rather than an astringent; in fact, it acted almost as a caustic in one or two cases. 5. It cannot take the place that has been allotted to it.

PATHOLOGY.

IN CHARGE OF ALLEN J. SMITH, A.M., M.D.,

Professor of Pathology in the Medical Department of the University of Texas, Galveston, Texas.

AND

HENRY W. CATTELL, A.M., M.D.,

Demonstrator of Morbid Anatomy in the University of Pennsylvania; Prosector to the American Anthropometric Society; and Pathologist to the Presbyterian Hospital, the Institution for Feeble-Minded Children at Elwyn, etc.

The Fat-Cell; its Origin, Development, and Histological Position.—Dr. W. C. Borden (*New York Medical Journal*, February 24, 1894) questions the correctness of the common belief that adipose cells are fatty infiltrated connective-tissue cells. He believes that fat-cells constitute a type of glandular cells with special metabolic functions, differing both in physiological and histological features from the ordinary connective-tissue cells. The isolation of the adipose structures of lower vertebrates to the gland-like masses called fat-bodies, as those of the abdominal cavity of the frog, suggests the peculiar nature of the constituent cells. These fat-bodies are well seen in frogs after full nutrition (summer frogs) in close relation with the genito-urinary organs. In the necturus subcutaneous fat-bodies are found on the dorsal and ventral surfaces. These fat-bodies of the frog and necturus, as well as of other of the lower vertebrate animals, are the homologues of the renal fat, and of the panniculus adiposus of the higher vertebrates, in the writer's view. Examination of such fat-bodies in one of the lower vertebrate animals in a condition of starvation (a winter frog) shows them to be made up of cells quite like the liver cells of the same animal. In the fœtal state many of the higher animals exhibit similar cells beneath the skin arranged in regularly shaped gland-like masses, which subsequently, in the author's view, become the seat of fat-storage. Besides these cells, however, there are in the higher vertebrates other cells involved in the production of fat-tissue,—cells which closely resemble ordinary connective-tissue cells, but which Dr. Borden believes are the offspring of the original fat-centre cells. In the interior of these cells the fat accumulates just as it is seen to accumulate in the epithelial cells of the liver. The author also points to the distinctive work of fat-formation from various substances as analogous to the metabolic work of glands, and calls attention to the similarity of liver cells functionally as well as structurally in fatty infiltration of this organ. The points in support of this theory of the special origin and glandular nature of the fat-cell are summed up as follows:

1. Its occurrence in lower vertebrates in special organs, composed of gland-like cells and developed from special centres.

2. Its first appearance in fœtal higher vertebrates in gland-like masses, developed from special centres homologous to those of lower vertebrates.

3. Continuance of adipose tissue in lower vertebrates as fat-bodies or

fat-glands, never changing into other tissue, and as distinct in structure and function as other ductless glands.

4. The limits placed on the position of occurrence of adipose tissue in all animals, and its non-appearance in certain regions where connective tissue is always present.

5. Its specialized metabolic functions, and the gland-like development and arrangement of its blood-supply.

These points seem to place adipose tissue in an entirely different histological and physiological class from that occupied by the supporting connective tissues.

The Broncho-Pneumonia of Smallpox.—(Contribution a l'Étude anatomo-pathologique et pathogénique de la Broncho-Pneumonie Variolique.)—In a series of forty-five fatal cases of smallpox, Auché (*Archives cliniques de Bordeaux*, December, 1893, and January, 1894) found seventeen (or thirty-seven per cent.) affected with some form of broncho-pneumonia, the proportion of its occurrence varying somewhat in adults and in infants (forty per cent. for the former, and thirty-two per cent. for the latter class). Such pneumonic complication appeared in all the graver forms of the infection, in hemorrhagic smallpox, in the confluent, coherent, and in the distinctly discrete types. These lesions were almost invariably encountered in persons dying during the suppurative period of the disease; in only one case, a case of hemorrhagic variola, were they met with as early as the third day of the eruption. As a rule, the pneumonia presented itself as a bilateral lesion, although there seemed to be a tendency to wider invasion on the right side in many instances; the favorite seats of involvement were the lower lobes and the middle lobe of the right lung, along the posterior borders, the lateral surfaces, and less frequently the anterior borders and the apices. In order of frequency of occurrence in this series of cases the complication appeared as acute catarrhal pneumonia (*spléno-pneumonie aiguë*), with marked congestion, as pseudo-lobar broncho-pneumonia, and as disseminated broncho-pneumonia. The bronchial alterations for the most part consisted of a simple tumefaction of the bronchial mucous membrane with proliferation and desquamation of the epithelial cells, with sometimes complete denudation of the surface of the mucosa and intense infiltration of the bronchial walls with embryonic cells. The bronchial lumen contained, and was sometimes filled by, an exudate composed of a mass of fine granulations made up of great numbers of small round cells, together with some broken-down epithelial cells and a few large, round granular and pigmented cells with small, feebly staining nuclei. At some places blood was found in the bronchial lumen. The alveolar alterations occurred either as splenization, as red hepatization, or as gray hepatization. In the splenified areas (catarrhal and congested areas) the endothelial cells appeared as swollen, proliferated, and desquamated; the vessels were dilated, and in the interior of the alveoli could be seen an exudate composed of large endothe-

lial cells, with granular protoplasm and feebly staining nuclei. In the red hepatized areas the alveoli were occupied by fibrinous networks imprisoning in their meshes endothelial cells and white and red blood-globules; and in the gray hepatization the alveoli were filled with leucocytes and fewer large, darkly-granular cells, while the alveolar walls were infiltrated with embryonic cells, and the vessels had become less distended, and for the most part invisible. These lesions the author is disposed to regard as different stages of alveolar inflammation; and, as a rule, the author states they are distributed somewhat irregularly as compared to the classical descriptions of broncho-pneumonia with its bronchial infiltration and peri-bronchial hepatization and peripheral zone of splenization. Yet generally in the centre of each patch of involvement it could be seen that there was a greater degree of intensity of the process, even if peripherally the alveoli were in a red or gray hepatized condition and not surrounded by the splenized zone.

In connection with these lesions, probably causal, the author was able to demonstrate the presence of various forms of micro-organisms, sometimes a single variety, sometimes associated varieties. Those most frequently found were the *pneumococcus lanceolatus* of Fraenkel, the *streptococcus pyogenes*, and the *staphylococcus of suppuration*. In the adults the author names them in the following order of frequency: streptococcus, pneumococcus, staphylococcus; in children, the pneumococcus, streptococcus, staphylococcus. These bacteria the writer regards as infectious agents secondary to the smallpox infection, gaining entrance to the lungs from the buccal cavity, from pustules of the air-passages, or from the exterior. He does not believe there is a direct relation between the unknown specific agent of the disease and the pneumonic complications.

Contribution to the Question of the Relation of the Streptococcus Pyogenes to the Etiology of Scarlatina. (Work from the department of pathological anatomy and bacteriology in the Institute of Tübingen. Edited by Professor Baumgarten, vol. i. pages 393–402. Braunschweig: Published by H. Bruhn.) By Johannes Boehm.

After an historical retrospect concerning the bacteria and protozoa found in scarlatina by Klein, Eddington, L. Pfeiffer, Fraenkel and Freudenberg, Lenhartz, Raskin, and others, the author reviewed "The Bacteriological Researches on Septic Processes in Children," by Babes, as far as they were of interest to the subject under consideration. Babes considered the streptococcus as the primary pathogenic factor in the etiology of scarlatina, influenced chiefly by the constant presence of the streptococcus in thirteen recent cases of glomerulo-nephritis. Proof was obtained in some of the cases by the culture method alone, and far less frequently by the microscopical researches. Boehm had a case of scarlatina in which the patient died in convulsions at the end of forty-eight hours. A protocol of the sickness and autopsy is given. Stroke cultures on glycerin-agar were made from the kidneys, the lymphatic glands of the neck, the tonsils, and

the skin; and portions of the same organs were placed in alcohol for histological study. The streptococci were obtained by histological and culture methods in the tonsil only. Boehm considers the streptococcus found in the internal organs in scarlatina as a secondary infection (probably from the tonsil). That the nephritis also belongs to this secondary infection is not shown, in spite of the constant appearance of the streptococcus in the cases observed by Babes. The characteristic tissue changes in scarlatinal nephritis do not develop hand in hand with an advancing growth of penetrating streptococci in the kidney. Babes has not noted any particular pathogenic organism that could be found constantly in relation to the scarlatinal process.

Histological changes of the internal organs could be considered as merely those of cloudy swelling. — Bonhoff (Berlin), *Hygienische Rundschau*, April 15, 1894.

Bacteriology of the Embryo. (*Il Policlinico*, p. 33, January 15, 1894.) By A. Maffucci.

The author gives his results of one thousand bacteriological experiments on the chick embryo, and of one hundred and fifty on the fœtus of the rabbit; he draws the general conclusion that whilst the embryo lives it does not permit the development of pathogenic germs in its tissues save in exceptional circumstances, but may destroy, attenuate, or store up such germs for later development in its extra-ovular life. He states that in some cases a non-pathogenic virus of the adult fowl may be pathogenic as regards its embryo. These conclusions are founded more upon experiments on the chick than on the fœtal rabbit. The doctor gives the results of his experiments on the passage of tubercle bacilli through the placenta from the mother, and on paternal infection of the ovum with tuberculosis.— *Tertatologia*, April, 1894.

MISCELLANEOUS.

Practical Points in the Hygiene of Ships and Quarantine. (*Lancet*, May 5, 1894.) By W. Collingridge, M.A., M.D., Cantab., Medical Officer of Health, Port of London.

The merchant navy of England numbers no fewer than two hundred and fifty thousand persons, and it is of the utmost importance that the master of a vessel should realize how necessary it is for his own good that the hygiene on board of the ship should be as near perfect as possible. In order that the health of a ship may be good, it is necessary to pay great attention to the bilges, which are especially apt to contain putrescible organic matter, and when mixed with salt water and other waste products, such as oil from the machinery, are apt to be the carrier of certain definite diseases, such as cholera, yellow-fever, and malarial fevers. Theoretically, the bilge

should be kept dry, but, as this is not practicable, it should be regularly pumped dry and a certain amount of clean water added and the pump again employed. In disinfecting a boat the bilge should be washed with the disinfectant solution and afterwards pumped out.

The lower forecastle is a poor place for the sailors to be berthed in, and should only be used in the smallest vessels. The top-gallant forecastle is far preferable, but the ideal accommodation is undoubtedly the deck-house, for ventilation and cleanliness can best be obtained in this manner.

The minimum cubic space of seventy-two cubic feet is too small, and should be increased by law to at least one hundred cubic feet. In order to prevent condensation—a very frequent source of complaint and annoyance—upon the iron, it is advised first to coat the iron with a thick varnish and then to dust with finely granulated cork. When dry the excess can easily be removed. The bunks should be made of iron, not less than six feet two inches long by two feet across, and should be arranged in but two tiers, and away from the sides of the boat. There should be a well-laid, solid, caulked floor.

If the drainage from the forecastle passes into a closet or privy, as it does so frequently, it should be connected by means of a pipe scupper, so that no effluvium can pass directly into the sleeping quarters. The Italian proverb quoted, that "Where the sun shines the doctor cannot live," shows that absence of light means the presence of dirt. Ventilation is to be secured by well-arranged scuttles and ventilating shafts terminating in proper cowls, while the light is supplied by the use of scuttles, this being greatly increased by bevelling off the edges of the scuttles and the judicious use of light-colored paint, deck-lights and side-lights.

The majority of the stoves employed are said to be antiquated, costly, and dangerous. The best and most economical stove is a well-constructed circular, wrought-iron, slow-combustion one, lined with fire-clay. The pipe, by being placed at a higher level in the cowl, can be used to generate heat in order to make a current of air for ventilating purposes. Well-ventilated washing-rooms and closets are to be of the simplest description, but of such a character as well to accomplish their utilitarian purposes. When in port the closets should be closed, the crew being ordered to go ashore in order to pass their urine and evacuate their bowels. A hospital should be arranged in the place where the best ventilation and isolation can be secured.

All waste food and dirt are to be thrown overboard at sea, or collected in buckets after each meal and placed in the dust-bins provided for this purpose on shore. "A damp ship is an unhealthy ship," and too much water should not be used even for cleansing purposes, and all superfluous water should be gotten rid of as soon as possible.

The British sailor undoubtedly suffers much from improper diet, the only food prescribed by law being lime juice and sugar. The same diet is chosen for a northern or a southern cruise, and too great a reliance is still placed upon the salted meats, and too little attention is given to the variety of the diet. The writer advocates the establishment of cooking

schools and the insisting upon the cooks' obtaining a certificate of proficiency in this branch. Although the quantity of water is limited in diet scales, the seaman is practically allowed as much as he likes. As condensation and subsequent aeration is so easy of adoption, the supply of water is no longer such a serious question except upon the smaller vessels. For carrying water iron tanks, painted outside and cement-washed within, with large manholes admitting sunlight if possible, should be provided. A simple plan of testing the purity of water, so far as organic impurity is concerned, is to color a sample of it a bright pink with Condy's fluid, and to note if the pink color be sustained fifteen to twenty minutes, in which case the water may be considered as tolerably safe, whereas if the color be discharged or changed to a dirty brown the water is suspicious, and cautionary measures of boiling or distilling and aeration should be adopted.

In conclusion the writer makes the following statement:

"Quarantine was originally proposed as the then only known method of arresting the spread of disease, the nature and spread of which were unknown, and which, in fact, were looked upon as due to some mysterious influence. It rested upon the traditions of medicine, and with the advance of knowledge of disease has lost all justification for its continuance. In this country, as a protection against disease, it has been proved to be absolutely useless, and, indeed, in some respects absolutely dangerous. It can never be relied upon nor carried out in such a way as to prevent the possibility of disease being imported, while it has been one of the most serious hinderances to commerce which has ever been conceived. As a matter of fact, a perfect system of quarantine is unknown, and, as practised, has never prevented the extension of an epidemic. Hence it is that Great Britain has absolutely declared for many years past in favor of a rational system of medical inspection, the detention of the sick, the disinfection and release of the ship, and all persons in good health, and this lead is being steadily followed by other countries. The last great steps in this direction have been taken by the Dresden conference and the conference recently held in Paris, both of which will have enormous influence for good. . . . The cost of an imperfect quarantine (for at the best it can only be this) is simply ruinous to the trade of a country, and one-tenth of the money wasted upon this barbarous and antiquated system, if spent upon works of a sanitary character, would have an infinitely great result in the prevention of infectious diseases."

In commenting editorially upon this article, the *Lancet* says that it is impossible to keep the bilge dry, and that water should be used abundantly, care being taken, of course, that it does not get through the deck. It is also considered impracticable to keep the bunks away from the side of the ship in order to secure better ventilation. H. W. C.

The Diagnosis and Treatment of Floating Kidney. (*Journal of the American Medical Association*, May 12, 1894.) By Harvey Reed.

The author, after dwelling upon the fact that this disease is much more common in women, more particularly in middle life and those that have borne children and are fully nourished, gives the more usual causes for floating kidney. A brief *résumé* then follows of the ordinary differential diagnostic signs and symptoms between this disease and other abdominal affections, and in conclusion the author states that palliative treatment is rarely successful, and that he is of the belief that the only safe and successful treatment of a movable kidney is a radical operation by which the kidney is replaced and firmly anchored by a number of sutures, which should not only pass through the capsule, but also include a portion of the parenchyma as well as the fascia and muscles underneath.

For accuracy and rapidity of the operation in making the radical treatment for a movable kidney, he would suggest the use of a suture of either chromatized catgut or silkworm-gut, both ends of which should be armed with a long, slim needle varying from six to seven inches in length, according to the patient, the points of which should be triangular, and when used it should be passed through the capsule and the parenchyma of the kidney and directly through the muscles of the back, making its exit through the skin the same as its mate.

When the radical treatment is not resorted to, there is always danger of serious organic disease of the kidney, which may sooner or later prove fatal, and if not, the patient becomes a nervous, suffering, miserable creature, of little benefit to herself or those around her. J. D.

A Further Study of Hysterical Cases and their Fields of Vision. (*Journal of Nervous and Mental Disease*, January, 1894.) By John K. Mitchell, M.D., and G. E. de Schweinitz, M.D., of Philadelphia.

After reporting twenty-five cases, including, for the sake of contrast, other cases in which the neurasthenic element predominated over pure hysterical manifestations, two of these being of spinal injury and one of pure malingering, the authors come to the following conclusions: 1. Achromatopsia, or loss of color-sense, is not present in American cases. 2. Reversal in the normal sequence of colors, so that red is the largest field, is usually present when there is anæsthesia, but that anæsthesia and color-sense do not necessarily belong together is proved by anæsthesia cases examined in which reversal was not demonstrated. 3. The green field is at least relatively more, and more often, contracted than the others. 4. In the difficult distinction between certain types of neurasthenic and hysterical patients, the presence of disturbance of the color-sense is of diagnostic import. It is less apt to be present in the former than in the latter, and yet its absence is of little meaning. 5. It is possible that in the rare cases of hysterical, one-sided or general, hyperæsthesia it will be found that colors are more acutely appreciated than is normal, and that the color-fields are

correspondingly enlarged, although this has not been proved. 6. The violence of the hysterical manifestations bears no relation to the disturbance of color-sense, the most marked effect being found in patients least affected nervously, while practically normal visual fields exist in cases in which the general symptoms of hysteria, anæsthesia excepted, are of the highest grade. 7. Some of the following changes are likely to be found in cases of hysteria: simple contraction of color-fields with unaffected form-fields. Contraction of both form- and color-fields, especially the green field. Partial or complete reversal of the sequence of color appreciation, while the size of the fields remains normal. Unusual observations of portions of the visual fields—for example, in the form of a hemianopsia, or greater contraction of the fields on one side than on the other, the greater contraction usually being found on the same side with the anæsthesia—are noted.

C. W. B.

FORENSIC MEDICINE.

IN CHARGE OF LORENZO D. BULETTE,
Of the Philadelphia Bar.

PRACTISING MEDICINE BY PATENTEE OF A PROPRIETARY MEDICINE NOT OTHERWISE QUALIFIED UNDER STATE MEDICAL ACTS.

In prosecutions for violation of the provisions of State medical acts regulating the practice of medicine and surgery, it is frequently urged as a defence that the medicine prescribed was a proprietary patented medicine, manufactured and used by virtue of the authority conferred by letters-patent issued by the United States securing to the patentee and his assigns the exclusive right to compound, use, and vend such medicines according to the specifications of the letters-patent. But it has been uniformly held that such patent does not authorize the administration of such medicines, in the character of a practising physician, without conforming to the requirements of a State law regulating the practice of medicine and surgery.

The conflict thus alleged between the laws of a State and the United States is only apparent and not real; and the courts, in determining the sphere of operation of each law and explaining their application, are confronted with two questions: *first*, whether the evidence sufficiently shows that the acts of the defendant come within the definition of practising medicine; and, *second*, whether the penal clause of the medical act is inoperative by reason of the patent.

As to the first, it has been said that administering medicine may be the

office of a nurse; but prescribing medicine to the sick implies the exercise of skill in the discrimination of diseases and the selection of fit remedies, to acquire which skill is the object of medical education, and to exercise which, for fees, is but another name for the practice of medicine.

As to the second question, the limits of space allotted to this article forbid any detailed consideration of the constitutional question as to how far the law of the United States, under which a patent is granted, and the law of a State regulating the practice of medicine, come into collision. But, for the purposes of this paper, it may be briefly stated that the question has been frequently and exhaustively considered by the highest courts, State and Federal, and, in the face of every argument urged against it by the industry and eloquence of the most eminent counsel, they have uniformly decided in favor of the constitutionality of a statute enacted in pursuance of the exercise of the police power of a State, and purporting to protect the public against imposition and injury to health by requiring that persons who engage in the practice of medicine shall submit to an examination conducted by learned physicians, and shall produce a license from such competent masters of medical science.[1] The question cannot, therefore, again be successfully raised at this late day, but may be considered as set at rest.

With this much for the general separate treatment of the two questions above presented, we may profit by a specific presentation of illustrative facts from two adjudicated cases in which the questions arose, together with the comments of the courts in applying the principles of law to the facts thus proved.

In Thompson *vs.* Staats,[2] which was a prosecution for practising medicine contrary to the provisions of a State law, it was proved that the defendant visited a patient, felt his pulse, and gave him medicine, which he took, and charged and received two dollars from the patient. The defendant offered in evidence letters-patent granted under the laws of the United States authorizing him and his assigns, for the term of fourteen years, to make, construct, use, and vend to others to be used, a certain improvement in the preparing, mixing, compounding, administering, and using certain medicines, and offered to prove that the medicine administered by him to the patient was composed of the materials and compounded in the manner described in the specifications annexed to the letters-patent; and he urged that as such assignee he had the right under the patent to administer such medicine without being licensed to practise physic, as required by the laws of the State. The evidence was objected to by the plaintiff and rejected by the court. A verdict was found for the plaintiff, and, in affirming the judgment entered thereon, the Supreme Court said, "The letters-patent were properly rejected as irrelevant. They only authorize the patentee and his assigns to make, construct, use, and vend his newly-discovered compound of medi-

[1] Cooley's Const. Lim., * p. 596.
[2] 14 Wendell (N. Y.), 395.

cine, not to practise physic or surgery within the regulations of the statutes of this State."

In State *vs.* Van Doran,[1] the language of the statute is as follows: "Any one who shall practise or attempt to practise medicine or surgery in this State without first having registered, with the clerk of the Superior Court of the county in which he attempts to practise, his certificate of license obtained from the Board of Medical Examiners, shall be guilty of a misdemeanor."[2]

The defendant was tried on an indictment under this statute for having practised medicine without registration.

At the trial, a witness testified that the defendant examined his throat, diagnosticated the disease as catarrh, said that he would cure the witness for ten dollars, and prescribed and furnished some pills that he had been selling as a proprietary medicine.

Another witness testified that the defendant stated when on trial before the magistrate that he was a practising physician in W. County. Mr. A. testified that the defendant told him that he had a right to prectise medicine and intended to do it; that he did not understand the defendant to say that he used only his own proprietary medicine. Doctor M. visited the patient, Mrs. L., and found the defendant in attendance on her, when he said that he had as much right to practise medicine as Doctor M., a registered physician, had. He had medicine (Indian hemp and pulsatilla) in the sick-room, and said he was giving it to the patient, who was having fits. The defendant, when examined in his own behalf, said that he had been called to see plenty of sick people, and "after examining them," if it was appropriate, prescribed his proprietary medicine.

The defendant further testified that he had graduated from a medical college in Chicago, and that he had lost his diploma thereby obtained. There was no evidence of a license from the Medical Board of North Carolina; but it was proved that the defendant had applied to the clerk of the county court to be registered as a physician, and his application had been refused.

At the request of the attorney for the Commonwealth the court charged the jury that if "the defendant attended any sick person, examined the condition of such sick person, and prescribed the medicine of his own make for the sick person, and held himself out as competent to prescribe the medicine of his own make, in those cases wherein it was the proper remedy in his opinion, and did prescribe it in such cases, the defendant had violated the criminal law," and should be found guilty. And a verdict of guilty was returned by the jury.

The Supreme Court, to which the case was carried on appeal, speaking through Mr. Justice Avery, said, "We think that the instruction embodied

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[1] 109 N. Car., 864.

[2] North Carolina Laws, 1889, chap. 181, § 5.

the law applicable to the testimony bearing upon the charge. An unlicensed person, claiming to be a physician and holding himself out to the world as such, cannot, after examining a patient who has asked his services, diagnosticating the disease, fixing an amount or price for which he will cure the patient, and giving him a prescription, evade the law by proving that the medicine administered was a proprietary medicine prepared and sold by himself. If such were the law, a pretender, with a half dozen or more medicines of his own manufacture, and marked as nostrums suitable for certain classes of diseases, might declare himself a graduate in medicine and capable of curing diseases of all kinds, after examining the patient and determining which one of his ready-made preparations would prove the panacea to meet the particular symptoms, might administer it, and thus defeat and evade this salutary law passed for the purpose of preventing quacks from masquerading as trained medical men. A vendor of patent medicines who does not pretend to diagnosticate disease and determine which of his remedies is proper in a particular case, is not a violator of this statute; but that avocation cannot be used to shelter one who is practising medicine and holding himself out as a physician, and who varies his prescriptions to meet symptoms discovered on his own examination."

The same court said, "We think that the evidence warranted the judge in giving the instructions asked by the attorney of the Commonwealth, and in adding, that if 'the defendant had practised in the County of W. within two years without having first registered and obtained a certificate, that is, prescribed for sick persons, or held himself out to the public as a physician or surgeon, he was guilty.'"

The court further said, "It is not essential that the prosecution should show, in order to convict under the statute, that the defendant ever prescribed for or practised upon a particular patient, but it would be sufficient to prove that he held himself out to the public as a physician or surgeon, and invited or solicited professional employment from any who might need or desire such service.

"If the defendant merely held himself out to the public as a physician or surgeon, he was guilty of the offence created by the statute."

BOOK REVIEWS.

TUMORS, INNOCENT AND MALIGNANT. THEIR CLINICAL FEATURES AND APPROPRIATE TREATMENT. By J. Bland Sutton, F.R.C.S., Assistant Surgeon to the Middlesex Hospital, London. Octavo volume of 526 pages, with 150 engravings and 9 full-page plates. Cloth, $4.50. Philadelphia: Lea Brothers & Co., Publishers, 1894.

This work will be a lasting monument not only to the author, but also to the London Pathological Society, from the Transactions of which so many of the illustrative cases have been taken. The book is one which is eminently satisfactory for the student, the general practitioner, and the specialist. It is not merely a work upon pathology, but has to do with the practical surgical treatment of tumors. It is, indeed, significant and interesting to note that a book upon tumors can be illustrated by means of two hundred and thirty-seven cuts representing gross appearances, while only twenty-two illustrations are employed for the purpose of elucidating the microscopical findings of the parts described.

Comparative morbid anatomy receives its due share of attention, and the new subject of odontomata or tooth tumors receives especial mention. The odontome is defined as a tumor composed of dental tissues in varying proportion and different degrees, arising from teeth-germs, or teeth still in process of growth. This class of tumors has heretofore usually been grouped among the dermoids.

In order to simplify matters the tumors are arranged on lines similar to those employed in biology, and they are, therefore, classified into the following four distinct groups:

I. Connective tissue tumors.
II. Epithelial tumors.
III. Dermoids.
IV. Cysts.

Each group contains several genera, such as lipomata, chondromata, osteomata, etc., under the connective-tissue tumors. Each genus has one or more species, as under lipomata, where there is a subcutaneous, subserous, subsynovial, submucous, intermuscular, intramuscular, periosteal or meningeal species, and of each species there may be one or more varieties.

In order to show the conciseness and clearness of the text, we quote several paragraphs from the article upon spina bifida:

"The term spina bifida is applied to congenital defect in the union of the laminæ of one or more vertebræ, associated with malformation of the spinal cord or its membranes.

"The spinal cord and a large part of the brain are formed by the dorsal coalescence of the medullary folds. The fusion of these folds commences in the thoracic and extends into the cephalic and caudal regions. For a short time after coalescence the embryonic cord and superficial epiblast remain in contact. Gradually they become separated by the intrusion of connective tissue, some of which chondrifies and afterwards ossifies to form vertebræ and intervertebral disks. In the early stages the

cord has a longitudinal extent equal to that of the notochord, and this equality is maintained for some time after the closure of the medullary groove. Subsequently the vertebral column grows at a greater rate than the nerve-tube; the result is that at birth the medullary cone at the end of the cord is opposite the upper border of the second lumbar vertebra.

"The species of spina bifida are determined according to the stage of development at which the defect occurs, as determined by the anatomy of the parts. They are: (1) myelocele; (2) syringo-myelocele; (3) meningo-myelocele; (4) meningocele; (5) masked spina bifida (spina bifida occulta)."

H. W. C.

LECTURES ON AUTO-INTOXICATION IN DISEASE, OR SELF-POISONING OF THE INDIVIDUAL. By Ch. Bouchard, Professor of Pathology and Therapeutics, Member of the Academy of Medicine, and Physician to the Hospitals, Paris. Translated, with a Preface, by Thomas Oliver, M.A., M.D., F.R.C.P., Professor of Physiology, University of Durham; Physician to the Royal Infirmary, Newcastle-upon-Tyne; and Examiner in Physiology, Conjoint Board of England. In one octavo volume of 302 pages. Extra cloth, $1.75 net. Philadelphia: The F. A. Davis Company, publishers, 1914 and 1916 Cherry Street.

Auto-intoxication is a subject the importance of which we are only beginning to appreciate. The author of this book deals with uræmia, its pathogenesis and treatment; poisoning the result of a disorder of general nutrition, as in diabetes; the toxicity of bile and its clinical bearing in jaundice; the auto-intoxications, both acute and chronic, arising from fermentation in the stomach and intestine, pointing out clearly the part played by the liver in preventing such intoxications, and giving practical information as to intestinal antisepsis; and, lastly, the intoxications occurring in typhoid fever and in cholera.

It is a great pleasure to read such a work as this, written very clearly, the conclusions being based on carefully-conducted experiments by the author, all due regard being paid to the researches of others, and at the same time giving the practical application of the results to clinical medicine.

When we stop to consider the amount of poisonous material circulating in our blood, the amount that is daily eliminated by the urine, and the amount that is ingested with our food or produced by fermentation in the alimentary canal after ingestion, our wonder must be that auto-intoxication is not more common.

The author shows that the disintegration of tissues is not the only source of danger, but that the gastro-intestinal tract produces many poisons which may in some cases produce uræmia, due to an excessive formation of these substances rather than a deficient elimination. While the author states that the blood of an animal is much more toxic for an animal of another species than for another animal of the same species, yet rabbits were used in his experiments. It seems to us that the results would have been more valuable had dogs been employed.

The old theories, which held that uræmia was produced by such substances as urea, uric acid, ammonia, creatin, leucin, and xanthin, the inorganic matter found in the urine, or by œdema of the brain, are all very carefully disposed of, and the conclusion is reached that there is no one substance but many (at least seven) toxic substances which are causal of uræmia.

While we cannot say there are not several poisons in the blood of uræmia, yet it seems the writer has multiplied them a great deal in order to account for different symptoms. We must bear in mind the fact that one poison may produce many different symtoms in different animals,—it is a question of the animal rather than of the poison. In no condition are the symptoms more variable than in uræmia, and we should not be too hasty to attribute each symptom to a separate poison.

It seems to us that too much importance has been attached to the toxicity of the potassium salts and to the coloring matter of the urine.

While it is shown that the urea of the blood is increased over the normal in the state of uræmia, yet this can have no toxic effect, but only act as a diuretic in this quantity,—indeed it is suggested that urea be used as a diuretic in the treatment of uræmia. We know that this is the only result from the injection of large quantities into the lower animal.

All in all, the book is a very good one and should be read by every physician.

W. S. C.

AERO-THERAPEUTICS, OR THE TREATMENT OF LUNG-DISEASES BY CLIMATE: BEING THE LUMLEIAN LECTURES FOR 1893, DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS, WITH AN ADDRESS ON THE HIGH ALTITUDES OF COLORADO. By Charles Theodore Williams, M.A., M.D. (Oxon.), F.R.C.P., Senior Physician to the Hospital for Consumption and Diseases of the Chest, Brompton; Late President of the Royal Meteorological Society. London: Macmillan & Co., and New York, 1894.

The author has published his Lumleian Lectures delivered before the Royal College of Physicians in 1893 in a volume of nearly two hundred pages. They comprise a scientific system of aero-therapeutics based on the combination of modern meteorology with clinical experience, each element of climate being duly considered in its bearing on health and disease; to this are added valuable data, personally obtained, as to health resorts all over the world. The last thirty pages are devoted to a consideration of the high altitudes of Colorado and their climates. This lecture is a good example of the author's painstaking, personal investigations.

Dr. Williams analyzes the results of two hundred and forty-seven cases of phthisis sent by him to high altitudes, including Davos, Arosa, St. Moritz, Maloja, Wiesen, the South African highlands, Colorado, and New Mexico. Two-thirds of the cases were in the first stage of phthisis, and the average residence was a little over one year. Among the two hundred and forty-seven cases a cure is stated to have been effected in forty per cent.; great improvement in twenty-nine per cent.; improvement in thirteen per cent.; the remainder died. Of the cases in the first stage the author claims eighty-seven per cent. improved. "The improved among unilateral cases mounted up to 91.5 per cent., the right lung being a shade more favorable than the left lung, but where both apices were involved the percentage of improved was 76.5. In the second and third stages there was arrest of disease in sixteen per cent., in twenty-nine per cent. partial arrest, and in eight cases decrease of disease, or a total improved of fifty-four per cent." Bearing in mind that these are the statistics offered by the senior physician of the Brompton Hospital, they are certainly remarkably encouraging. Dr. Williams adds, "The only explanation I have to offer of my favorable results is the large preponderance among my patients of first-stage cases, demonstrating the advantage of using the high altitude climate before the disease has attacked and destroyed large portions of the lungs and the strength and vigor of the individual has been sapped by disease. I noticed two causes which seriously interfered with the steady progress usual at high altitudes, one being the use of the Koch treatment, which was vigorously pursued during the winter of 1890–91 at Davos, and proved disastrous to several patients, and the other was the influenza, which prevailed very severely at St. Moritz and Davos for two winters, and unquestionably killed a great many more of the weakly patients."

G. H.

A Manual of Therapeutics. By A. A. Stevens, A.M., M.D., Lecturer on Terminology and Instructor in Physical Diagnosis in the University of Pennsylvania; Demonstrator of Pathology in the Woman's Medical College, Philadelphia; Physician to St. Mary's Hospital and to the Southeastern Dispensary; Pathologist to St. Agnes's Hospital.

Special therapeutics constitutes the first part of this work and nearly all of the recent remedies are considered. The practitioner whose memory is not equal to the formulæ of the various remedies with similar terminations—for instance, lysol, iodol, theol, trional, etc.—will find a convenient reference-book in this little manual.

Ninety pages are assigned to the discussion of applied therapeutics. The diseases are classified and each mentioned with therapeutic recommendations, accompanied in many instances by prescriptions. The chapter on incompatibles, usually found in such works, is written by Joseph W. England. The dose table, which precedes the index, would be more useful to students if the doses were given in the metric as well as the apothecaries' system. A. W. P.

NOTICES.

THE TRANSACTIONS OF THE PAN-AMERICAN MEDICAL CONGRESS.

The proceedings of the First Pan-American Medical Congress were compiled by the secretary-general, Dr. Charles A. L. Reed, and transmitted to the Department of State in November, 1893. By recent joint resolution of the Senate and House of Representatives, the manuscript was transmitted to Congress, and a concurrent resolution has been adopted directing the public printer to print the same. The manuscript is now in the office of the public printer, and will be put to press at once under the supervision of the editorial committee, of which Professor John Guitéras, of Philadelphia, is chairman.

NOTE TO CONTRIBUTORS.

Accepted manuscripts will be liberally compensated for, immediately upon publication; or reprints, if stated on the manuscript, will be furnished in lieu of such compensation. It is distinctly understood that all articles appearing as original matter are for our exclusive use, and are not to appear in any other publication excepting the Transactions of the society before which the paper may have been read. Illustrated articles are especially desired.

All matters of business, as well as subscriptions, should be sent to the International Medical Magazine Company, 716 Filbert Street, Philadelphia.

Manuscripts, exchanges, and books for review should be addressed to the Editorial Office, 3455 Woodland Avenue, Philadelphia.

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ORIGINAL COMMUNICATIONS.

PERSONAL EXPERIENCE IN THE TREATMENT OF STRANGULATED HERNIA.[1]

BY JOHN ASHHURST, JR., M.D.,

Barton Professor of Surgery and Professor of Clinical Surgery in the University of Pennsylvania; Surgeon to the Pennsylvania Hospital, etc.

LOOKING over my records I find that I have operated on nineteen cases of strangulated hernia, and in addition have operated on two cases of irreducible omental hernia, not strangulated. I have, of course, seen a large number of cases where I have succeeded in reducing the hernia by taxis. I have not kept a list of these, but the number is at least as large, if not larger, than the number of those operated on. While the number of my cases may seem small in comparison with that reported by others, this very fact confirms the view which I have always entertained—that strangulated hernia is a rare affection in Philadelphia, and rarer in this country than in the countries of the Old World, England and Ireland particularly. Although the cases are few in number, yet, following the old maxim,— "*Observationes non numerandæ sed perpendendæ sunt*,"—it has seemed to me that it might be worth while to bring them before the Academy, so as to introduce the subject for discussion.

Of the nineteen operations for strangulated hernia, fourteen were for inguinal hernia, confirming what every one knows—that inguinal is the

[1] Verbal communication to the Philadelphia Academy of Surgery, May 7, 1894, with DISCUSSION by Dr. John B. Deaver, Dr. J. M. Barton, Dr. O. H. Allis, Dr. H. R. Wharton, Dr. Richard H. Harte, Dr. James Collins, Dr. William G. Porter, Dr. Samuel Ashhurst, Dr. Thomas R. Neilson, and Dr. J. Ewing Mears.

most common form of strangulated hernia, and the one that most frequently calls for operation. One of these cases was in a child, operated on at one of my clinics and at once removed by the parents, and the further history of that case I do not know. Of the other thirteen patients, ten recovered and three died. The deaths occurred in cases where a fatal termination might have been expected, and were not due to the operation. In one case the hernia had been strangulated for five days and the patient was a pronounced diabetic. He died of gangrene after the operation, dependent upon the diathetic condition and upon the prolonged strangulation. The second death occurred in a woman of seventy-eight years. The strangulation was very tight, and the bowel was gangrenous at the time of operation. Rupture occurred at the sulcus corresponding to the line of constriction, and death took place from exhaustion in the following twenty-four hours. The third death occurred in a man of intemperate habits, who had a hernia strangulated for thirty hours and who had been subjected to forcible taxis before admission to the hospital. So forcible had been the taxis that it had resulted in rupture of the bowel in two places. At the operation the scrotum was found enormously swollen and black from effused blood. Twelve inches of the bowel were gangrenous, and the gut presented two openings. I removed the bowel and performed a circular enterorrhaphy, but the patient died thirty-two hours afterwards from cardiac failure, without evidence of peritonitis. It is evident that in none of these cases was the result in any way due to the operation.

Four times have I operated for strangulated femoral hernia, with three recoveries and one death. In the fatal case the patient died in a collapsed condition thirty-six hours after the operation. I have no particulars of the case, but there was no evidence of peritonitis.

I have had one case of strangulated umbilical hernia which terminated fatally. The patient was eighty years of age, and the strangulation had existed for a number of hours. The patient died of peritonitis, which, as we all know, is particularly apt to occur as a complication after umbilical hernia, incisions into the upper portion of the abdomen being more apt to be followed by peritonitis than incisions in the lower portion.

The youngest patient on whom I have operated was a child two years of age, with inguinal hernia. This case ended in recovery. The oldest patient was the woman eighty years old, with umbilical hernia, just referred to.

Among cases of special interest I would mention one of the inguinocrural variety, where the hernia after coming down through the inguinal canal does not pass into the scrotum, but turns up in the line of Poupart's ligament and passes outward along the groin. It is usually complicated, as it was in this case, with an undescended testicle. In this case the hernia had been down six days when I operated. I was able by taxis to reduce a portion of the tumor, but finding that there still remained a hard mass which could not be reduced, I thought it right to open the sac and deter-

mine the exact condition. I found that the hard lump was the testicle in a gangrenous state, either from a twist in the cord or, as seemed more probable, from the taxis which had been practised rather violently before the patient's admission to the hospital. I excised the testicle and the patient recovered.

I have operated in two cases of irreducible omental hernia. In these cases a tumor had been present in the tunica vaginalis for a long time, and while there were no symptoms of strangulation, the weight and bulk of the tumor gave great annoyance, and the patients were exposed to the risk of a portion of the gut coming down at any time. I, therefore, felt justified in operating in these cases, cutting away most of the omentum after securing its neck between two ligatures.

The points of special interest in the treatment of strangulated hernia which I would suggest for discussion are, as regards the resort to taxis, its limitations and the aids to its performance, and then as regards operative treatment, the particular mode of performing the operation, more especially in reference to the direction of the deep incision, relative to which some difference of opinion prevails, and as to the advantages and disadvantages of Gay's method as modified by Fergusson, and the advantages or disadvantages of Petit's plan of operating without opening the sac.

The limitations of taxis. I feel obliged to say that while I have reduced a good many strangulated hernias by taxis, while I think that it should be the surgeon's first thought, and while if practised with care and skill it is a safe method and one which will usually succeed when resorted to in time, yet I must express my belief that in the hands of an inexperienced practitioner, who sees but few cases of hernia, taxis is an unsafe procedure. Under such circumstances, I think that the patient would sometimes be safer with the operation of herniotomy than with taxis, for herniotomy is not a very difficult operation and not very dangerous if performed with caution, whereas taxis, while seeming to be very simple, yet if employed with great persistence and force may lead to the most serious consequences. My own cases of herniotomy which resulted fatally had been mostly subjected to prolonged taxis. Taxis, therefore, I think has its limitations, and should be resorted to with great gentleness and with great caution, except in the hands of those surgeons who are sufficiently familiar with the anatomy and treatment of strangulated hernia to feel that they may use the method more freely and more systematically. It is, of course, known to the Fellows of the Academy that its founder, the late Professor S. D. Gross, maintained that very few cases of hernia required operation. He prided himself that he was able to effect reduction by taxis where others had failed; and such was undoubtedly the case. In the hands of a man like Professor Gross, taxis was a safe procedure, but in the hands of the ordinary practitioner I believe that the line of safety for the patient will often be found in herniotomy rather than in a prolongation of taxis.

It is scarcely necessary to say that when taxis is employed it should be

done with gentleness and with system. The ordinary method of pushing at the hernia is very uncertain, and is not only apt to do harm but is almost sure not to do good. The rule that the last portion of bowel which has come down should be first returned is very valuable and should always be borne in mind. Then I find what I am in the habit of speaking of to students as a kind of conjoined manipulation, a very useful mode of applying taxis, and I think the safest. The neck of the sac is grasped by the thumb and fingers of one hand, while the other hand, spread out, exercises a combination of pushing and squeezing; and then by a kind of alternating movement, slightly relaxing one hand while with the other the pressure is increased, if the hernia is reducible at all, it will go up. If no gurgling is heard in a few minutes, it is not likely that taxis will succeed.

As regards the *aids to taxis*, the older surgeons resorted to many modes of assisting taxis, but in modern times surgeons have pretty much come down to two or three. Even the warm bath, which was much resorted to formerly, I think is seldom employed at present. At the Pennsylvania Hospital, our practice is to put the patient in bed, apply ice over the hernia, and give a moderate quantity of opium. When the resident physician is not able to reduce the hernia by gentle taxis, this course is followed until the surgeon has been summoned. It often happens that when the surgeon arrives he finds that the hernia has been reduced spontaneously or disappears under the slightest touch. If this fails, our rule is to administer ether and again employ taxis, and in this way the hernia can usually be reduced. Before administering ether we have an understanding with the patient that if taxis does not succeed, the operation is to be resorted to.

Another manipulation which is of great importance is to draw down the hernia a little before beginning the upward-pushing movement, the object being to disengage the portion of bowel which is nipped by the source of constriction. The plan known as Seutin's I have never seen of avail, and I can hardly conceive of a case where it would be required in which it could be used successfully. This plan consists in endeavoring to introduce the finger or thumb-nail into the constricting ring, which is then stretched; this could be practised only in very thin persons, and where it could be done I think it probable that taxis would succeed without it.

With regard to *herniotomy*, the first question that will have to be decided is the extent of the external incision. Some operators make a large incision, extending over the entire length of the hernial tumor. Others endeavor to effect the operation through a very small incision, as in Gay's method. My own plan is to make the external incision three or four inches in length, and over the neck of the sack. As regards the particular method of making the incision, whether by pinching up the tissues, transfixing, and cutting outward, or by cutting down from without, I really think that there is no choice. My own practice is to employ the latter plan. Having gone through the skin and fascia, the surgeon, of course, takes up the tissues cautiously, dividing them on the director. The next question is whether

or not the sac shall be opened. I agree with the English rule, that where it is justifiable to resort to taxis it is proper to endeavor to reduce the hernia without opening the sac. I have often tried to do this, but have been compelled to open the sac, as the constriction has been in its neck. In making the deep incision the tip of the left forefinger should be pressed against the source of constriction and the hernia-knife passed flatwise; this is then turned in the proper direction and the deep incision made with a gentle sawing motion, assisted by pressure of the finger below. I am satisfied that the rule of the English surgeons, to make the incision directly upward in inguinal hernia, is the correct one. While in a certain number of cases the surgeon can say this is a direct, or this is an oblique hernia, yet in other cases the relation of the parts is so confused that he cannot be absolutely certain which form of hernia he is dealing with. In the one case the internal epigastric artery will be on the inside and in the other on the outside. The safe rule, therefore, is to make the incision directly upward and in the line of the long axis of the body. In femoral hernia the deep incision should be made upward and inward. It is only in this direction that we are safe from doing injury and certain to reach the source of constriction, this being where the falciform process and Gimbernat's ligament join. The only danger from hemorrhage when this plan is followed is from an abnormal distribution of the obturator artery. To avoid wounding this, a good plan is to adopt Mr. Erichsen's suggestion to blunt the edge of the hernia-knife by rubbing it on the handle of another knife, or, as suggested by Dr. Wyeth, to keep the point of the knife firmly pressed against the pubis.

In umbilical hernia the safe line of incision is in the median line, and directly downward. The operation is apt to be followed by peritonitis under any circumstances; but I think that there is less danger if the incision is made in this way, on the general principle that wounds in the lower portion of the peritoneum are less likely to be followed by peritonitis than those above. In the case on which I operated the hernia was of long standing, but the strangulation was recent, from the protrusion of an additional portion of bowel. There I followed the judicious rule of not attempting to reduce the whole hernia, which would have required an extensive dissection, but simply relieved the strangulation and returned the part recently protruded.

With regard to the method of dealing with the contents of the hernia, I think that all surgeons agree that if the bowel is healthy it should be returned, but that if gangrenous it should be left in the wound and a false anus formed. If a distinct sulcus is found I think that it is a good rule not to reduce the bowel, so that if it should give way the extravasation may be outside of the peritoneal cavity. As regards the omentum, I think that it is a safe rule to cut it away pretty freely. If it is perfectly healthy it is proper to return it, but if there is doubt it is safer to remove it.

With regard to after-treatment, I am sure that the safest mode is not to

make any attempt to get the bowels opened. Some surgeons are in the habit of giving a dose of oil immediately after the operation, and some even before the operation; but this seems to me to be injudicious. I put the patient on the use of opium and belladonna for a few days, gradually diminishing the dose, and usually the bowels move spontaneously in five or six days.

The number of cases which I have brought before you is limited, but they represent a sufficient variety to perhaps be available for the discussion of some of the points suggested.

DISCUSSION.

Dr. John B. Deaver.—I cannot add anything to what has been said by Dr. Ashhurst. I would ask the experience of the Fellows with reference to anastomosis. I believe that anastomosis operations are of value in but few cases of strangulated hernia. I have tried the method more by way of experiment, but the cases have not recovered. In order to do this operation it is necessary to pull down additional bowel. As Dr. Ashhurst suggests, where this sulcus has formed it is better to allow the bowel to remain in the wound or, as I prefer, to cut it away. In hernia the condition of the patient does not warrant the procedure of anastomosis, and even under the most favorable circumstances the operation is anything but satisfactory.

I remember a case of strangulated femoral hernia on which I operated some years ago. The bowel was completely separated, so that I could not find the proximal end through the opening made in exposing the hernia. It was necessary to open the linea alba to find it. There was extravasation of fæces into the peritoneal cavity; here I did an anastomosis, but it was not successful.

I believe that we all agree that it is unwise to move the bowels immediately after the operation for strangulated hernia where the condition of the bowel is questionable and where increased peristalsis would favor rupture.

Dr. J. M. Barton.—Dr. Ashhurst has had better fortune with taxis than I have had. One reason is perhaps that I have not spent much time with taxis. I have so often found the bowel in such a doubtful state, even after short strangulation, that I feel much safer, if there is any question as to its condition, to operate at once under antiseptic precautions. In one case the bowel was entirely gangrenous eighteen hours after the violence that produced the strangulation.

As to the advisability of making lateral anastomosis immediately after removing gangrenous bowel, the condition of the patient rarely warrants any prolonged operation, and I think that the rule now is, in intestinal obstruction, irrespective of cause, to do nothing further than establish an artificial anus at the first operation. I have devised an instrument for use in these cases. It is a modification of Dupuytren's enterotome. It can be adjusted in a moment, and is intended to make an intestinal anastomosis, allowing the artificial anus to remain as a safety-valve. Since devising the instrument I have not had a suitable case in which to apply it.

Dr. O. H. Allis.—I think that we all agree in what has been said about the use of forcible taxis. I remember an instructive case operated on by Dr. Hearn. It had been sent to the hospital after severe and prolonged taxis had been used. The constricted portion lay in the hernial canal, and he was obliged to cut down on it at that point. It was impossible to pass a grooved director between the constriction and the gut, so firmly had it been wedged. In two other cases I have seen the gut driven back and forced between the peritoneum and some of the layers of the sac, and in that way while the physician felt that he had reduced it he had only masked the trouble and made it more certainly fatal.

With regard to umbilical hernia I would state that I have had there three cases and have never seen such a case die. I should be glad if the Fellows would tell us their experience with umbilical hernia.

Dr. H. R. Wharton.—I think that the most difficult point to decide in the treatment of strangulated hernia is the question whether or not to put the bowel back when it shows the marked effect of strangulation. In many cases where there is not absolute sloughing, it is hard to decide whether or not a bowel whose nutrition is much impaired will recover. Within the past ten days I have had a case of femoral hernia where the color of the bowel was very unfavorable. After dividing the stricture I noticed some improvement in the color of the bowel, and I put it back with some misgivings. The patient has progressed satisfactorily without rise in temperature.

Another point that I have observed is that in cases where omentum is present in the hernial sac and prolonged taxis has been employed, the bowel is not in as bad condition as where omentum is not present. I think that the presence of omentum may save the bowel from pressure.

A point which Dr. Ashhurst did not bring out, although I know that he is perfectly familiar with it, is the relative rapidity of the occurrence of dangerous strangulation in inguinal and in femoral hernia. In femoral hernia the strangulation is more dangerous in the same time than in inguinal hernia.

Dr. Richard H. Harte.—I would ask Dr. Ashhurst's experience with Littre's hernia. I have seen two cases. One was brought to St. Mary's Hospital after prolonged taxis, and the hernia was supposed to have been reduced. The symptoms did not subside, and when I saw the case the man was dying. At the autopsy it was found that a small portion of bowel had been caught and was strangulated. The second case was seen at the Episcopal Hospital. In this case, too, operation revealed a small portion of the bowel which was caught and strangulated. These cases are apt to be overlooked until rather late symptoms of strangulation make their appearance.

Dr. J. M. Barton.—In reply to the question of Dr. Allis, I have had six cases of umbilical hernia and have had the misfortune to lose two. A method of reduction that I have found successful, I think is worth alluding to. In these cases, the strangulated bowel is invariably in the centre of a mass of omentum. The small knuckle of intestine is at the very base, and any pressure on the surface would be utterly useless. In a case of this kind, seen some time ago, I grasped the abdomen above and below the hernia and lifted the abdominal walls, actually raising the patient from the bed. At the second attempt this proved successful. I have employed the same method in another case with success.

I have had the misfortune to operate by Tait's method within a few weeks. The patient was a woman fifty years of age with well-marked symptoms of obstruction. I examined all the openings, but did not find any hernia. I then made an abdominal section and found a small knuckle of bowel in the femoral opening. The extent of bowel caught was not more than three-fourths of an inch. The patient was quite fat, and in order to release the gut I had to prolong the incison over to the right side. The bowel was gangrenous, and in delivering it infection probably took place, the woman dying forty-eight hours later. There were no marked symptoms of peritonitis. For hernia I should not consider this operation for an instant, but I did not know the case was one of hernia. After delivering the intestine I put my finger in the femoral opening, and tried to feel it from the outside, but was unable to, owing to the amount of tissue over the femoral opening and the small size of the hernial sac.

Dr. James Collins.—I have nothing to add except to mention a little manœuvre which sometimes succeeds after taxis has failed, and that is to put the shoulders on the floor and draw the hips up, making taxis in this position.

The youngest case on which I have operated was a child two years old. It got

well. My oldest case was eighty-two years old. I have operated on a number of cases with success, with the exception of a few operated on at the German Hospital. In these cases the strangulation had existed for several days. I would emphasize the necessity of opening the sac. In one case where I opened the intestine, I found, on drawing down the bowel, another band about the intestine. I have seen the same thing in other cases.

Dr. William G. Porter.—I would emphasize the point made by Dr. Collins as to the necessity of drawing down the bowel. I have seen two cases where the bowel in the sac was carefully examined and found all right and returned, and was immediately followed by a gush of liquid fæces. My explanation of these cases is that the strangulated portion had returned and a healthy portion of the bowel had come down.

Dr. Samuel Ashhurst.—I have seen a case like those referred to by Dr. Harte, and this prejudiced me against the operation without opening the sac. Taxis was employed and the tumor was reduced, but the symptoms did not disappear. The patient died, and at the post-mortem there was found a small portion of bowel still retained within the internal ring, not involving the whole lumen.

My experience has been that almost every case of hernia stands by itself. I do not think that I have seen a case which did not present peculiar features. It is this that makes hernia to me one of the most interesting subjects in surgery.

Dr. Thomas R. Neilson.—The question whether or not the strangulated bowel shall be returned is a very important and often perplexing one. I have several times been in doubt, but in all cases have returned the bowel after relieving the constriction, drawing down the bowel and searching for perforations, and noting that under bathing with hot water the color of the bowel slowly returns. Another guide is the preservation of the lustre of the peritoneal surface of the bowel. If the lustre is still present it is an evidence that the vitality is not entirely destroyed.

I have had two cases of Littre's hernia or partial strangulation of the bowel. One was in an elderly woman brought to the hospital after five days of the so-called obstruction of the bowel. The patient was practically moribund, but at the earnest solicitation of the patient I operated. The constriction was found at the internal abdominal ring, involving only a portion of the gut. The patient died shortly after the operation. The second case was in a young man with left inguinal hernia. The patient presented a tumor not larger than a large marble, exceedingly tender, with pain at the umbilicus and a tendency to nausea. I operated and found a Littre hernia of the small intestine, and the patient recovered. The possibility of the occurrence of this hernia should not be overlooked.

Dr. J. Ewing Mears.—I can report one case of umbilical hernia in which strangulation had existed for forty-eight hours and general peritonitis had supervened. I operated and made an artificial anus, but the patient died within twelve hours.

Dr. O. H. Allis.—I think the operation in umbilical hernia is no more dangerous than in femoral or inguinal hernia. Where the constriction has been prolonged, probably any form of hernia means death. From what I have seen of umbilical hernia, I maintain that if it is a favorable case it is as likely to get well as a case of femoral or inguinal hernia.

Dr. John Ashhurst, Jr.—I think that Dr. Deaver is entirely correct in saying that in the majority of cases of strangulated hernia it is not proper to make an anastomosis of the bowel at the time of the herniotomy. Whether we should open the gut or resect a portion of it when gangrene is present, I think should be decided by the extent of the gangrene. If there is only a patch, it is sufficient to open the bowel; if a large portion is gangrenous, it is probably safer to remove it. In the majority of cases it is proper only to establish a false anus, which may be subsequently dealt with. The only exception is where the surgeon has reason to fear that the portion of bowel involved is high up in the small intestine, when so much of the bowel

would be cut off from exercising its digestive function that the patient would die of inanition, even if he should survive the immediate results of the operation. Under such circumstances, if the patient is in a condition to justify further interference, I think it better to complete the operation by uniting the bowel according to one of the methods suggested. In the case in which I removed twelve inches of the bowel and united the ends by circular enterorrhaphy, no extravasation occurred, and the patient's death did not appear to be due to the operation.

With regard to taxis, I had intended to refer to the view of Mr. Jonathan Hutchinson, a surgeon for whose judgment I have the greatest respect. It will be remembered that he has recently, in connection with the advocacy of abdominal taxis, as he calls it, in cases of intestinal obstruction, referred to the operation of herniotomy, and has maintained that the statistics of the London hospitals show that the operation is a very dangerous one. Therefore he urges a persistent and systematic resort to taxis. There is no doubt that a surgeon who approaches a case believing that it is never necessary to operate will be more likely to succeed by taxis than one who entertains the view held by many at the present time, that taxis is almost certain to fail, and that it is therefore better to resort at once to herniotomy. The personal equation thus comes into these cases. In connection with this matter I should like to refer to a case which I recently saw at the Pennsylvania Hospital. An old man, extremely deaf and extremely obstinate, was brought to the hospital with a hernia that could not be reduced. The resident physician made a reasonable application of taxis, and failed. Then he put him under treatment with rest, cold, and opium, and sent for me. I attempted taxis and failed. The patient positively refused to take ether or to submit to an operation. I then made another trial of taxis, pushing it further than I have ever done before and further than I liked to, and the hernia did at last go up, and the man went out happy the next morning.

As I said before, I have only once operated in umbilical hernia, and in that instance the patient died. It is seldom that operation is required in these cases, taxis almost always being successful. I think that the results of experience show that operation in umbilical hernia is more dangerous than in either inguinal or femoral hernia. I was interested by Dr. Barton's suggestion to aid the taxis in umbilical hernia by lifting the abdominal wall. The same object has been accomplished by Froumüller by applying an exhausted cupping-glass over the hernia, and Dr. Washington has recommended a similar procedure.

Dr. Wharton has referred to the state of the bowel. My rule is to pay a good deal of attention to its color, and I resort to the use of hot water to see if the color returns. The glossiness of the bowel is also of importance. If the bowel retains its natural lustre, it is usually safe to reduce it. If it is dull and lustreless, and still more if the tissues separate under the surgeon's finger, it is not safe to return it.

Reference has been made to the presence of omentum acting as a safeguard against injury to the bowel from taxis. The same thing is found where the sac contains serum. It was a clinical observation of the late Professor Joseph Pancoast, that when he opened a hernial sac and found a quantity of bloody serum he felt that the patient was going to do well. In such cases the serum serves as a cushion to prevent damage to the hernia from the taxis.

Dr. Collins has referred to taxis with inversion. Before the days of anæsthesia this method was regarded as of great value, but like other "adjuvants to the taxis" is, I think, now seldom resorted to.

Dr. Porter has spoken of the gush of fæces that occurs sometimes when the bowel is reduced. This, I believe, is due to the sudden "letting on," as it were, of the peristaltic stream, rupture occurring at the sulcus which marks the point of constriction. In all cases, therefore, it is important to make a thorough examination of the bowel, and, if a sulcus is found, not to effect reduction of the part which has been constricted.

Reference has been made to the persistence of symptoms after reduction. In such cases, I think that it is the generally recognized rule that the sac should be opened and an attempt made to bring the hernia down again. If this cannot be done, it would be right to extend the incision upward, which I think would be safer than making a median section. The same rule applies where there are symptoms of strangulation and a hernial sac is, on exploration, found empty.

Dr. Harte and Dr. Neilson have both referred to strangulation of a portion of the calibre of the bowel, often spoken of as Littre's hernia, but more accurately designated as Richter's, Littre's being a hernia of one of the natural diverticula of the gut. These cases are apt to be overlooked, and abdominal section for these partial herniæ has therefore been resorted to, the same operation having also been practised for obturator hernia. In some cases it is impossible to recognize the existence of a hernia, and under such circumstances abdominal section might properly be employed; but where hernia in any particular position is suspected, I think that it will be advisable to open and explore at this position, rather than to begin with abdominal section.

Dr. Wharton has spoken also of the relative dangers of delay in femoral and in inguinal hernia. Femoral hernia will not bear temporizing, and taxis should not be tried with the same persistence as in inguinal hernia.

SHALL ANYTHING BE DONE BY LEGAL AUTHORITY TO PREVENT THE SPREAD OF TUBERCULOSIS?[1]

BY FREDERICK I. KNIGHT, M.D.,

Boston, Massachusetts.

It is now twelve years since the infectious nature of tuberculosis, at various times before suspected or believed, was put beyond question, and yet very little has been done in this country to prevent its spread. Physicians recently graduated, and a few older ones who have kept themselves informed of progress in medicine, have enjoined care in the disposal of the sputa, and recently a few have had bulletins of information printed for the use of the sick, or those exposed to them, or both, notably the Pennsylvania Society for the Prevention of Tuberculosis, and Dr. De Lancey Rochester, of Buffalo, New York. In 1889 the Board of Health of New York City issued circulars, which were widely distributed, setting forth the communicability of tuberculosis and measures for its prevention. In 1893 the American Public Health Association and the Public Health section of the Pan-American Medical Congress adopted resolutions in favor of the reporting and registration of all cases of tuberculosis. In September of last year the State Board of Health of Michigan resolved that "hereafter, consumption (and other diseases due to the bacillus tuberculosis) shall be included in the official list of 'Diseases dangerous to the public health,' requiring notice by householders and physicians to the local health officer as soon as such a disease is recognized." "The purpose of this resolution," as ex-

[1] Read at the meeting of the American Climatological Association at Washington, May 30, 1894.

plained by the secretary of the board, "is to secure to the local health authorities and to the State board of health information of the location of each case of well-developed consumption; with the view of placing in the hands of the patient reliable information how to avoid reinfecting himself or herself, and how to avoid giving the disease to others; with the view of placing in the hands of the patient's family, or others most endangered, information how to avoid contracting consumption; also with the view of instructing superintendents of public buildings how best to restrict the spread of the disease." In February of this year the Board of Health of New York City took similar action, but the regulation is not quite so stringent. The circular declares that "the [health] department will hereafter register the name, address, sex, and age of every person suffering from tuberculosis in this city, so far as such information can be obtained, and respectfully requests that hereafter all physicians forward such information on the postal cards ordinarily employed for reporting cases of contagious disease. This information will be solely for the use of the department, nor will the department assume any sanitary surveillance of such patients, unless the patient resides in a tenement-house, boarding-house, or hotel, or unless the attending physician requests that an inspection of the premises be made; and in no case where the person resides in a tenement-house, boarding-house, or hotel will any action be taken if the physician requests that no visits be made by inspectors, and is willing himself to deliver circulars of information, or furnish such equivalent information as is required to prevent the communication of the disease to others." The resolution provides for the official visitation of tenement-houses, boarding-houses, and hotels where cases of tuberculosis are known to exist, unless the attending physician has assumed the responsibility as above stated. In all cases where it comes to the knowledge of the department that premises which have been occupied by a consumptive have been vacated by death or removal, an inspector will visit the premises and direct proper disinfection. Rugs, carpets, bedding, etc., are sent away and disinfected without charge. No other persons than those residing there at the time will be allowed to occupy the premises till the order of the board has been complied with. The order also provides for free bacteriological examinations, and that all cases in public institutions shall be reported.

The College of Physicians in Philadelphia held a special meeting in January of this year to consider the proposed act of the board of health of that city in reference to the registration of tuberculosis. After a long discussion participated in by a number of the prominent members of the College, the resolution of Dr. Flick, looking to the registration and disinfection of houses which have been infected by tuberculosis, and recommending the establishment of a municipal hospital for the treatment of the disease, was rejected, and the following resolutions offered by the council of the College were passed:

"*Resolved*, That the College of Physicians believes that the attempt to

register consumptives and to treat them as the subjects of contagious disease would be adding hardships to the lives of those unfortunates, stamping them as the outcasts of society. In view of the chronic character of the malady, it could not lead to any measures of real value not otherwise attainable.

"That strict attention on the part of physicians in charge of the individual cases, insisting on the disinfection of the sputum and of the rooms, on adequate ventilation, and on the separation of the sick from the well as far as possible, will meet the requirements of the situation so far as they practically can be met, and better than any rules that, for diseases so chronic, can be carried out by a board of health.

"That the College of Physicians respectfully requests that no official action be taken in the matter by the board of health, except the insisting on the disinfection of rooms in which consumptives have lived and died, in instances in which such procedure is not likely to have been adopted under the direction of the attending physician."

During the past winter a committee was appointed by the chairman of the Section on Clinical Medicine, Pathology, and Hygiene, of the Massachusetts Medical Society, of which committee I had the honor to be chairman, to consider what means could be adopted to prevent the spread of tuberculosis in our State. The members of this committee felt that it would be unwise to attempt too much at first, but that the time had certainly come for some kind of an entering-wedge, which could be driven deeper as circumstances and the temper of the people seemed to warrant or demand. So we decided to respectfully request the State board of health to consider the propriety of issuing a circular declaring the infectious nature of the disease, that the chief danger was from the sputum, and how to take care of this, copies of this circular to be distributed in large numbers to the physicians of the State, and by them placed in the hands of every family where a case of tuberculosis was known to exist. The committee also took the opportunity of expressing their opinion of the desirability of isolating tuberculous patients in hospitals, and the ultimate erection of special hospitals for them. The board of health acceded very willingly to the wishes of the committee, and have issued a bulletin setting forth the prevalence of the disease, its nature and mode of prevention, and also a small leaflet of information, which they suggest local boards of health to issue for the use of the patient and his family.

This is about all that has been done. How can this apparent indifference to the most fatal disease in the world be accounted for? Is it that there lingers any doubt about the infectiousness of the disease? I think not on the part of any one who has looked at the evidence of it. Though every one might not admit that every case came from a previous case, he would not in the face of the evidence deny such a possibility. It is hard, in the wide-spread prevalence of the disease, to get convincing clinical substantiation of what has been so abundantly proved experimentally. The experience of the nurses at Brompton Hospital is quoted over and over

again to prove that the attendants of consumptives have no special liability to contract the disease. The statistics are certainly remarkable, but equally so on the other side are the statistics of Cornet, who examined the records of thirty-eight nursing societies for twenty-five years, examining the causes of over four thousand deaths, and found that over sixty-two per cent. died from tuberculosis. It seems to me that it is to the magnitude of the case that one must look for the cause of the hesitation in grappling with it. The disease is not only wide-spread, but pursues such a long course that a satisfactory treatment of it (such as we would give a short, acute infectious disease) seems out of the question.

It stands to reason, however, that the State, if it is to take any interest in the health of its people, must not ignore the infectious nature of tuberculosis because it cannot do all it would, but must begin at once, and do what it can to limit its spread.

Let us consider for a moment what the State can do at once:

1. It can proclaim the infectious nature of the disease, assuring the people that, inasmuch as the chief danger is from the sputum, if that be destroyed they need have little fear. It can inform them of the best methods of disposal of the sputum, and urge that all sputum in consumptives' houses, and in public buildings, be so cared for. By this alone probably thousands of lives will be saved. Knowing the danger, people will devise new plans of avoidance for themselves and thus benefit the State.

Surely our people do not wish to be kept in ignorance, but have established boards of health to keep them informed of and protected against danger to their health, as far as possible, and if they find that the authorities have been remiss in this great matter they may not feel in a liberal mood when asked for future appropriations and concessions. If the proclamation of the nature of this disease had been longer pressed in its true light in the State of New York, I doubt if a tuberculous herd of cattle would have been recently released for want of funds to dispose of it.

2. The State can use the weight of its authority and recommendation for the establishment of special hospitals, whither thousands, who are now a burden at home, or improperly cared for at almshouse hospitals, are willing and anxious to go. The class of patients which would voluntarily enter the hospital is just the class which, out of the hospital, is most conducive to the spread of the disease. It includes those who are too sick to work, and often too sick to care for themselves personally, and who fall back upon their friends, who are unable to provide for them except by sharing their already overcrowded lodgings, and overtaxing themselves in such a way as to make them easy victims to contagion. That we cannot isolate all affected subjects is no reason why we should not isolate a part, especially when those left in the community will be those most willing and most able to take care of themselves.

Other methods of combating the disease will come naturally, and be demanded by the people when once they appreciate the gravity of the situation.

Whether our boards of health should at once require notification of cases is a question about which opinions will differ. The object of notification, of course, is to insure that from the first every case is surrounded by every known safeguard by one competent and interested to do so. The objection to it has been, first, that it would unnecessarily alarm the patient himself, and, secondly, that it would so alarm the family and friends that they would treat him as an outcast. In regard to the first objection it will, I think, be admitted by those familiar with the treatment of these cases of tuberculosis that those patients have always done best who have been apprised of the gravity of their condition, especially when this was done early. The late Dr. Henry Bennet, of Mentone, insisted upon this, and then encouraged his patients to make a hard, intelligent fight. In regard to the second objection, that it would create a panic among the relatives and friends, I do not think this need be seriously considered, if they are told that the careful following of the rules laid down will remove danger almost wholly. Leaving the whole matter in the hands of the family doctor, both in regard to the amount of information to be given and what precautions shall be taken, cannot be as efficacious as if this was done by an officer of the board of health. Unless the family physician thoroughly believed and was personally interested, it would not be properly done.

It seems unnecessary and unwise to attempt too much at first. It is not necessary in the beginning to even mention all the minor sources of infection, but there is no doubt the State must soon attempt the destruction of tuberculous cattle, for though meat, being usually cooked, is not a great source of danger, milk certainly is.

This Association was founded for the study of climatology and the diseases of the respiratory and circulatory systems. We have more to do with tuberculosis than any other association. We all know that something ought to be done to give the people the benefit of modern research, and it is our duty to so recommend. Therefore I shall propose in the business meeting a resolution calling upon all boards of health to issue bulletins of instruction in regard to the nature of tuberculosis, and the best methods of combating the chief sources of its dissemination, hoping and believing that this will prove an easy entering-wedge to more thorough and effectual means of controlling this most destructive disease.[1]

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[1] At the business meeting on the day following the reading of this paper, the Association unanimously passed the following preamble and resolution:

"WHEREAS, The American Climatological Association was founded, among other objects, to promote the study of the nature and treatment of diseases of the respiratory organs, and

"WHEREAS, Tuberculosis is the most fatal cause of such diseases, and

"WHEREAS, Modern research has placed this disease among the communicable, and hence, to some extent at least, among the preventable diseases,

"*Resolved*, That this Association do strongly recommend the medical profession of this country to promote measures tending to its prevention."

THE WOUNDS OF THE MANNLICHER MAGAZINE RIFLE AS EXEMPLIFIED IN THE RECENT CIVIL WAR IN CHILI, WITH GENERAL REMARKS ON ALL THE MODERN MILITARY SMALL-BORE RIFLES.[1]

BY A. M. FERNANDEZ DE YBARRA, M.D.,

Corresponding Member of the Spanish Medico-Chirurgical Academy of Madrid, Spain, the Argentine Medical Circle of Buenos Ayres, South America, and the Society for Clinical Studies of Havana, Cuba; Official Delegate of the Medico-Legal Society of New York to the First Medical Congress of the Island of Cuba; Executive Assistant Secretary-General of the First Pan-American Medical Congress, New York City.

"L'arme à feu, c'est tout; le reste, ce n'est rien."—NAPOLEON I.

THE recent adoption of small-calibre rifles by the armies of the principal European nations gives special interest to the subject of this paper. Another factor that renders it practical in no small degree is that it embodies the result of the actual trial of this kind of rifles in warfare, and not of mere experimental tests upon the cadaver, which is altogether a different thing. During the late civil war in Chili the question of superiority of these guns over the old ones came for the first time to be put to a practical ordeal, thus forever redeeming it from all tentative methods, and I have here endeavored to illustrate the principal points on which that superiority is based, as they appear in several official reports.

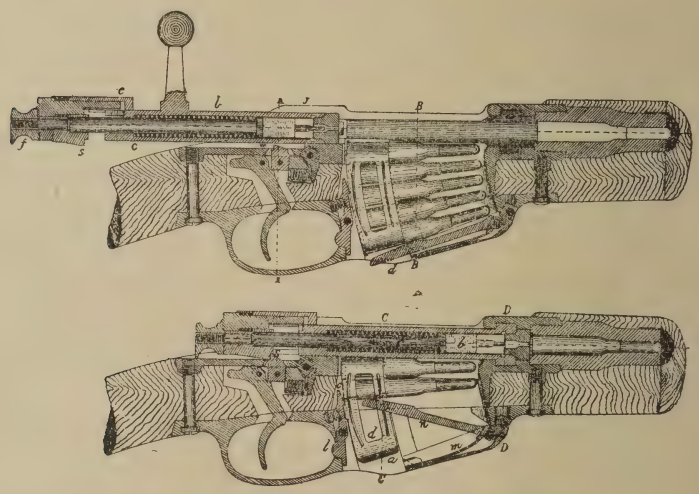
The very notable improvements lately made in military small-bore rifles have been the subject of speculation and serious discussion regarding the nature of the wounds inflicted with their projectiles, as well as the kind and amount of ambulance and surgical aid to the wounded which will be required in future warfare. The much greater range and accuracy of aim of these modern weapons of war necessarily imply a greater amount of surgical appliances and a larger number of attendants to be carried into the battle-field. It has been proved beyond doubt that eighty per cent. of all wounds in action are produced by bullets, and such important recent advancement in the principal fighting weapon of the soldier certainly requires a corresponding reformation in the military medical service of all nations, whether they have adopted the modern rifles or not.

"Mannlicher repeating rifle" is the name of two different guns, one of which is a revolving magazine repeater, and the other a detachable magazine repeater. The revolving magazine in the first-named consists of three

[1] Read by the author before the Section on Military Medicine and Surgery of the First Pan-American Medical Congress, held at Washington, D. C., September 5, 6, 7, and 8, 1893. This paper is published simultaneously in the Spanish language.

joined parallel tubes, each holding a number of cartridges, the whole being automatically revolved on a central axis as each tube is emptied, to bring one after another into the proper position for delivering the cartridges. The magazine is contained in a chamber formed in the butt of the stock, and it is loaded through an opening in front of the guard. The cartridges are successively fed forward by a spiral spring, automatically thrown up into a horizontal position, and forced into the breech of the barrel while placing the lock in the firing position. The cartridges are metallic and central-fire, but are necessarily of very small calibre. The other Mannlicher rifle (the improved in 1889–90, and both Austrian models) has a detachable magazine, but the breech mechanism is the same. The magazine is fixed to the shoe of the breech-action, and, when detached, is used as a cartridge-pouch. Several magazines, each with a certain number of cartridges, can be loaded, and, when needed, successively and quickly attached. This latter gun has also been improved afresh, and adopted by Roumania and Holland (see Fig. 1).

Fig. 1.



Mannlicher Rifle, Roumania and Holland Model.

The magazine lies under the receiver and holds five cartridges, which, with the packet containing them, are introduced through the receiver. There is no cut-off or provision for single-loading fire with the magazine held in reserve. This rifle, therefore, belongs to the repeating type.

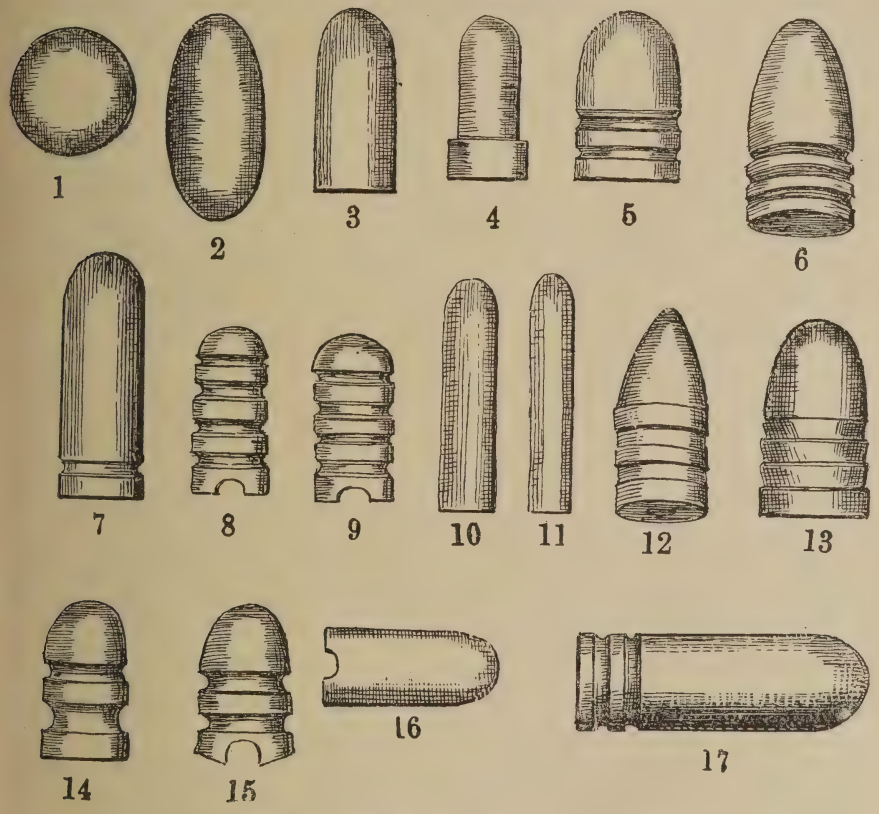
Unlike the two Mannlicher guns used in Austria and Chili, in this latest model the bolt and its handle rotate as the mechanism is operated, the direct pull-back of the other Mannlichers not being a feature of the Roumania and Holland rifle.

Cut No. 1 shows the action open and a packet of five cartridges just introduced into the magazine. In cut No. 2 the action appears closed, some of the cartridges fired from the magazine and one ready for firing in the chamber. (From a pamphlet published by Captain Stanhope E. Blunt, U. S. A.)

In former days molten lead was almost exclusively employed as material for small-gun projectiles, and the old round musket-ball (Fig. 2, No. 1), as formerly used by the United States troops, those of England, France, Germany, Spain, Russia, etc., weighed from a trifle less than one ounce to one ounce and a half. When it was found that a gun-shot wound depends much upon the softness or hardness of the bullet, instead of simply melting

the lead and pouring it into iron moulds, it was compressed by machine, or mixed with a variable proportion of tin. The modern rifle-bullet has an inner core of lead enclosed in a casing, either of maillechort metal, copper, or steel, and nickel-plated or not, which prevents the lead, even when softened by conversion of rotation into heat, from becoming deformed at the moment of striking the body. The shape of the bullet has also undergone evolution, from the perfectly round one of the smooth-bore old musket, the egg-shaped of the needle-gun, the long, perfectly cylindrical of the Chassepot, the still longer and narrower of the United States Krag-Jörgensen, the

FIG. 2.



RIFLE BULLETS NOW EMPLOYED, OF NATURAL SIZE.

1. Old round musket-ball, 480 grains. 2. Needle-gun, 530 grains. 3. Chassepot rifle, 387½ grains. 4. Old Belgian rifle, 385 grains (new, Mauser, 216 grains). 5. Bavarian rifle, 386 grains. 6. Enfield rifle, 530 grains. 7. Martini-Henry, 480 grains (improved, 410 grains). 8. Italian rifle, 310 grains (new, Carcano, 170 grains). 9. Swiss rifle, 310 grains (new, Schmidt, 215 grains). 10. United States Army Krag-Jörgensen rifle, 220 grains. 11. United States Navy Krag-Jörgensen, 165 grains. 12. Old Austrian rifle, 400 grains (new, Mannlicher, 372 grains, improved, 235 grains). 13. Snider rifle, about 400 grains. 14. New Belgian rifle, 337 grains. 15. New Austrian rifle, 235 grains, improved, 165 grains. 16. Prussian rifle, 372 grains, improved, 203 grains. 17. Mitrailleuse, 840 grains. (Modified and improved by the author from Agnew's, Bryant's, Wyeth's, and Fischer's works.)

oval with a plug of mixed metal, to the narrow, cylindro-conoidal form with ogival base of the Mannlicher improved rifle, which has the penetrating force, even at a distance of six hundred metres from the weapon,

sufficient to pass through five human bodies placed half a metre apart, or to at once disable two horses (see Fig. 2).

It is owing to the extraordinarily high rate of velocity and rotation, hardness, narrowness, smooth surface, and pointed shape of the Mannlicher projectile that its superior penetrating force must be ascribed. Thus, when at a high velocity it strikes a person, it has no time to stretch the various tissues encountered in its passage, but punches out a narrow channel resembling that made by a powerful drill. The apertures of entrance and of exit are almost exactly of the same size, it being sometimes impossible to distinguish them, and the wound is thus left in a favorable state for healing by first intention, as no contused parts remain for removal by sloughing.

In 1886 Austria adopted the first Mannlicher repeating rifle of eleven millimetres calibre, which was the model used by the Congressist soldiers during the late civil war in Chili, and of which remarkable campaign I give a short account farther on. This rifle weighs nine pounds six ounces; its projectile is made of a core of lead hardened with five per cent. of antimony, encased in a sheet of steel 0.131-inch thick, nickel-plated, its length is 1.20 inch, its diameter 0.322 inch, weight two hundred and fifteen grains, and it is projected by thirty-five grains of smokeless powder, giving an initial velocity of one thousand nine hundred and sixty-eight feet per second. Its range is two thousand five hundred yards with a parabolic curve, or trajectory, at six hundred yards' distance, of only about one and a half yards, which renders its aim extremely accurate. The number of charged cartridges in the magazine is five, and the weight of one hundred and fifty of these filled cartridges is nine pounds eight ounces, thus enabling the soldier to carry with him in his cartridge-box from fifty to seventy-five per cent. more ready shots than with the old rifles.

This Austrian gun was improved afterwards by diminishing its calibre to eight millimetres, and making the weapon much lighter. This last has also been remodelled, giving it a calibre of only 6.5 millimetres, as it is at present manufactured at the government armory at Steyr; the cartridge has 2.6 grammes of Austrian smokeless powder, model 1890; the bullet weighs 10.5 grammes, the cartridge, loaded, 22.7 grammes, its length is 77.7 millimetres, and the initial velocity of the projectile, at twenty-five metres from the muzzle of the gun, seven hundred and ten metres per second.

But there is another advantage in all the modern small-bore rifles. In the old ones the projectile rotates eight hundred times per second, while in the newer weapons it makes more than two thousand turns in the same space of time, the rotatory motion of the bullet being therefore more than double; the consequent centripetal force is correspondingly increased. The muzzle velocity also varies now from nineteen hundred and sixty-eight feet of the first Mannlicher to two thousand three hundred and twenty feet of the Carcano, adopted last year by the Italian army, while in the old rifles it was only from twelve hundred to fifteen hundred feet per second.

The Albini rifle has a calibre of eleven millimetres, its projectile weighs twenty-five grammes, and has an initial velocity of four hundred and seventeen metres per second. The Mauser, model of 1889, adopted by Belgium, has a calibre of 0.301 inch, the gun itself weighs eight pounds eight ounces, the bullet two hundred and sixteen grains, nickel-covered, projected by forty-three grains of Wetterin smokeless powder, with an initial velocity of two thousand one hundred and seventy feet per second, and a range of two thousand and fifty yards. The improved Mauser has a calibre of 7.65 millimetres, the weight of the bullet is fourteen grammes, its length thirty millimetres, and the outer covering is of maillechort metal; its initial velocity is to be determined with the adoption of another kind of powder. The Chassepot and the Gras have each a calibre of eleven millimetres, and are charged with smokeless powder; and the Lebel (these three are of French invention) has a calibre of eight millimetres, a bullet weighing fifteen grammes, and twenty-eight millimetres in length; it is encased in maillechort metal (an alloy of copper, nickel, and zinc), and its initial velocity is five hundred and seventy metres. This latter gun was improved in 1891 by the Berthier rifle, whose calibre is 0.301 inch, the bullet weighs two hundred and five grains, and is projected by thirty-three grains of smokeless powder instead of forty-six in the Lebel; the magazine contains four charged cartridges, and the Lebel eight; the gun itself also is lighter, eight pounds five ounces instead of nine pounds three ounces.

The Martini-Henry rifle bullet is made of one part tin and twelve parts lead; it is cylindro-conoidal, solid, compressed, length 1.27 inches, and has a slight cavity at the base, which is 0.450 inch in diameter; its present weight is four hundred and ten grains (formerly four hundred and eighty), and its charge of black powder eighty grains. In outward appearance it resembles the *mitrailleuse* projectile (see Fig. 2, Nos. 7 and 17). There is a paper cap over this bullet lightly smeared with beeswax. A rapidity of fire without aim amounting to twenty-five shots in a minute has been attained with this weapon.

The Schmidt rifle, model 1889, is the one adopted in the army of Switzerland, and resembles the Wetterli, until very recently used by the Italian troops; its calibre is 0.295 inch, it weighs ten pounds four ounces, the magazine contains twelve charged cartridges, the bullet has an outer covering of steel, its muzzle velocity is nineteen hundred and twenty feet in a second, its range two thousand one hundred yards, and the weight of one hundred and fifty charged cartridges eight pounds four ounces. Of all the modern small-bore rifles this is the heaviest, and the one whose magazine carries the largest number of ready cartridges.

The Russian army is provided with the Mouzin and the Berdan rifles, both of the same calibre, 0.300 inch, weight nine pounds five ounces, with five cartridges in the magazine. Its steel-covered bullet has an initial velocity of two thousand feet per second, sighted to two thousand one hundred yards, and the weight of one hundred and fifty charged cartridges is seven

pounds seven ounces. These two guns have lately been improved by Dandeteau, by reducing the calibre to 6.5 millimetres, the cartridge being charged with two grammes of smokeless powder, the bullet having an envelope of maillechort metal, and the whole *cartouche*, ready to fire, weighs twenty-one grammes. At a distance of twenty-five metres from the mouth of this new weapon, the velocity of the projectile is seven hundred and fifteen metres per second.

The German infantry rifle, model of 1888, is a repeater with central magazine carrying five ready cartridges; the length of the barrel is 29.1 inches, calibre 0.311 inch, with four grooves of 0.005 inch depth, and the entire gun weighs eight pounds five ounces. The bullet is steel-covered, weighs two hundred and twenty-six grains, projected by thirty-eight grains of Nobel smokeless powder, has an initial velocity of two thousand and fifty feet per second, and a range of two thousand one hundred yards. The weight of one hundred and fifty charged cartridges is eight pounds nine ounces.

The present rifle of the Italian soldier is the Carcano, 1892, which has a calibre of 0.256 inch (the smallest), weighs eight pounds five ounces, and the length of the barrel is only 28.8 inches. It fires a steel-covered bullet, weight one hundred and seventy grains, projected by thirty-four grains of smokeless powder, has an initial velocity of two thousand three hundred and twenty feet per second (the greatest), and a range of two thousand one hundred yards. The magazine contains five cartridges, and the weight of one hundred and fifty of them, ready for use, is seven pounds one ounce (the lightest).

The Spanish army is now being provided with a modified Mauser rifle, whose calibre is 0.295 inch, cut-off type, central magazine, having five ready cartridges in it; the barrel has four rifled grooves, 0.005 inch in depth; the bullet weighs fourteen grammes, is steel-covered, nickel-plated, projected by thirty-eight grains of smokeless powder, and has a range of 2000 metres. Twenty-five shots in a minute have been fired with this gun, but the average is from twelve to fifteen. The cartridge is metallic, central-fire, seventy-eight millimetres in length, and when charged and ready to be used weighs 28.6 grammes. At a distance of one hundred metres the projectile perforates a log of dried pine wood one metre long; at five hundred metres it pierces it to a depth of thirty-eight centimetres; at one thousand metres, twelve centimetres, and at two thousand metres, six centimetres. The bayonet is very short, in the shape of a knife, and easily attached and detached.

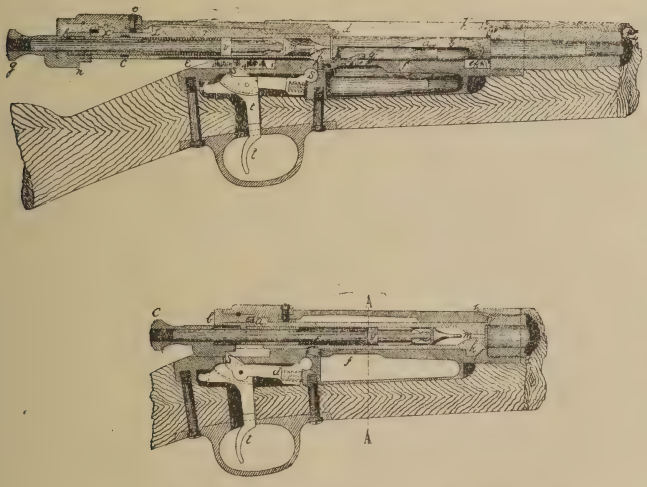
Portugal adopted the Kropatschek rifle, which has a tubular magazine, a calibre of 0.315 inch, the gun itself weighs ten pounds two ounces, the weight of the bullet is two hundred and forty-five grains, projected by seventy grains of black powder, with an initial velocity of one thousand seven hundred and sixty feet per second; the magazine holds eight filled cartridges.

The present ordnance rifle of the Japanese army is the Murata, cut-off type, tubular magazine, with eight filled cartridges in it; its calibre is 0.315 inch; the gun itself weighs nine pounds; the bullet, two hundred and thirty-eight grains, projected by thirty-six grains of Japanese smokeless powder, with an initial velocity of eighteen hundred and fifty feet per second.

The Lee-Metford rifle has superseded the Martini-Henry as the fighting gun of the British troops. Its calibre is 0.303 inch; it weighs nine pounds four ounces, the bullet has a cupro-nickel envelope, weighs two hundred and fourteen grains, is discharged by sixty-six grains of black cordite powder, has a muzzle velocity of eighteen hundred and thirty feet per second, and a range of twenty-one hundred yards. The magazine contains ten ready cartridges (the largest number but one—the Schmidt—of all the modern small-bore rifles), and the weight of one hundred and fifty charged cartridges is exactly equal to the weight of the gun itself.

The Krag-Jörgensen rifle is the one at present used in Denmark and Sweden, and just adopted as the ordnance weapon of the United States troops, with some important modifications (see Fig. 3). It replaces in this

FIG. 3.



UNITED STATES MODEL (1892) OF THE KRAG-JÖRGENSEN RIFLE.

The magazine, holding five cartridges, is of the fixed type, horizontal, under and also to the left side of the receiver. The gun has a cut-off, and the magazine can therefore be held in reserve while single-loading fire is conducted.

Cuts Nos. 1 and 2 represent sectional views showing the mechanism assembled, the former after a shot has been fired and the empty shell ejected, and the latter when ready for firing. (From a pamphlet published by Captain Stanhope E. Blunt, U. S. A.)

country the old Springfield rifle with its 0.45 inch calibre, and its compressed lead bullet that weighs five hundred grains. The Swedish and Danish model has a calibre of 0.315 inch, weighs nine pounds five ounces, the magazine contains five ready cartridges, the bullet has an envelope of nickel, weighs two hundred and thirty-five grains, is projected by seventy-

six grains of black powder, has an initial velocity of seventeen hundred and seventy feet, and a range of two thousand yards.

Thanks to the kindness of Captain Stanhope E. Blunt, Ordnance Department, United States army, I am able to give in this paper a few of the principal features of the model (1892) adopted by the United States government. The length of the barrel is thirty inches, 2.9 inches less than the Danish model; the calibre is 0.300 inch, instead of 0.315 inch; the number of rifled grooves is also less, four in place of six, and the depth of the same 0.004 inch instead of 0.006 inch; the weight of the gun itself in the American model is eight pounds seven ounces, while that of the Swedish and Danish is nine pounds five ounces. The bullet is fifteen grains lighter, and instead of being projected by seventy-six grains of black powder it is discharged by thirty-seven grains of Wetterin smokeless powder; the initial velocity is about two hundred and fifty feet greater in the American model. Its exact range has not yet been determined, for, most probably, another kind of smokeless powder will soon be adopted. For the long, triangular bayonet previously employed a knife bayonet has been substituted, having a blade twelve inches long. It can be readily attached to the gun, or detached to cut brush or dig up earth.

Now that I have given a general idea of all the modern military small-bore rifles, and the name of the nations that selected them for their armies, I shall endeavor to make a hurried sketch of the recent civil war in Chili, and conclude with a description of the wounds inflicted in that struggle by the Mannlicher magazine rifle, which *unquestionably* was the principal cause of the defeat of the government troops.

The Chilian campaign was unique, because of the fact that although ten thousand lives were sacrificed it only really lasted eight days. The army of the Congressists consisted of ten thousand men divided in three brigades or detachments; the first, under the command of Colonel Frias, was composed of three infantry regiments (*Constitución*, *Yquique*, and *Antofagasta*), a rolling battery, and two cavalry regiments (*Libertad* and *carabineros*); the second brigade was under the orders of Colonel Salvador, and consisted of four infantry regiments (*Valparaiso*, *Chanarat*, *Atacama* and *Huesco*), an ambulant battery, and a cavalry regiment (*granaderos*); the third detachment, commanded by Colonel Canto, was made up also of four infantry regiments (*Tarapacá*, *Talsac*, *Pisagua*, and *Esmeralda*), a rolling battery, and two cavalry regiments (*Guias* and *Escuadrones de lanceros*). There was besides a small group composed of a company of engineers, a battalion of huntsmen or sharp-shooters, and a detachment of marines with twelve Gardiner cannon of small calibre and rapid fire. Of the total number of men three thousand four hundred and forty-six were provided with the Mannlicher magazine rifle.

President Balmaceda had six thousand men in Coquimbo, a northern seaport city, not so very far from Yquique, where the revolutionists were intrenched. In Valparaiso he had from eight thousand to ten thousand

soldiers; in Santiago, the capital of the nation, three thousand, and in La Concepción, a southern city, another three thousand men. Total, from twenty to twenty-two thousand government troops.

The commandant-in-chief of the Congressists army was General Canto, whose immediate assistant was Major Körner, a retired officer of the German army, and director of the Military Academy of Chili. The supporters of President Balmaceda were commanded by Generals Alcereca and Barbosa, between whom, unfortunately, existed a great rivalry and personal enmity. It is well known that the navy, almost in a body, declared itself in favor of the revolutionists, and greatly helped them in the two final battles.

On the 20th of August, 1891, the bulk of the Congressist army landed at the bay of Quintero, a distance of eight to ten miles to the north from Valparaiso. The landing occupied all day, from eight in the morning to eight in the evening. The next day the first engagement took place, near a village called Concón, in which the victorious revolutionists obtained their success on account of the consternation and great demoralization produced among the government troops by the astounding effects of the Mannlicher magazine rifles, in the hands of the brigade under command of Colonel Salvador, which held the centre of the line. The Congressists took possession of thirteen cannon, one hundred and fifty packed mules with arms and ammunition, and made fifteen hundred prisoners. There were left upon the field of battle one thousand dead and fifteen hundred wounded. On their retreat the supporters of President Balmaceda lost fifteen hundred more men by their joining the revolutionists, compensating the loss of one thousand suffered by the Congressists in casualties, principally in wading over the small river Aconcagua. This engagement began at eleven o'clock in the morning, and at half-past four in the afternoon the government troops were dispersed in all directions and running towards Valparaiso and Santiago.

August 28, 1891, the battle of La Placilla occurred, at a distance of about four or five miles from the city of Valparaiso, the army of Balmaceda occupying a very strong position defended by ten thousand men. The effective strength of the revolutionists at that moment, including about two thousand soldiers passed over from the enemy, was between eleven and twelve thousand men. The fight lasted from six o'clock in the morning until twelve noon, General Alcereca being wounded and General Barbosa killed—the two commanding officers of the forces of the government. One thousand dead and fifteen hundred wounded on the government's side, and four hundred dead and more than a thousand wounded on the victorious revolutionists' side, were left on the field of battle. The Congressist cavalry made about three thousand prisoners. At four o'clock that very afternoon the triumphant revolutionists entered the city of Valparaiso, and President Balmaceda and his ministers sought refuge on board the German and English war-vessels anchored in the port.

The majority of all the wounded (about three thousand men) were sent to

St. Augustine Hospital, in Valparaiso. As the government troops had not ready to use, for lack of ammunition, a single Mannlicher rifle, but were armed with the Winchester, the Comblain, Remington, Gras, etc., it was easy to distinguish the wounds inflicted by the Austrian small-bore magazine rifle, which caused sixty-six per cent. of Balmaceda's wounded soldiers. It had been experimentally ascertained that the penetrating force of the projectile of this new gun, at a few inches from its muzzle, was such that it could pass through a log of pine wood one hundred and sixteen centimetres in thickness, and at a distance of one thousand metres could perforate a board of the same kind of wood thirty-eight centimetres thick. But to shoot a piece of wood and to shoot a human body are two different things, and even to fire at a corpse, no matter how nicely you place it, and to fire at an animate human being is, as we graphically express it in Spanish, *harina de otro costal* (flour from another bag). The practical test of that rifle in actual warfare was needed, and this campaign furnished it.[1] To play at bo-peep ceased there and then, and the subject became a matter of fact.

When the bullet struck the soft parts of the body, the wound presented a cylindrical track almost of the exact diameter of the calibre of the ball, and usually known as a "seton wound." There was scarcely any difference at all in the size of the point of entrance and that of exit, and no appreciable variation in the time of their healing. This does not happen, as every experienced army surgeon knows, with the common leaden bullet, in which case the wound of entrance always heals slower. Is it owing to a direct correspondence between the devitalization produced in the skin by the proportionate velocity, and reverse direction, of the projectile at the point of entrance and that of exit? Or is it not more probably due to the septic condition of the proximal end of the channel made by the ball in going through?

The wound made in the shaft of long bones with the bullet of the Mannlicher rifle at full speed was very much as if made with a boring-machine, so clean-cut, straight, and regular throughout was the track left. Gunshot wounds of long bones cause, as a rule, fractures which are rarely simple.

When the Mannlicher bullet happened to strike an epiphysis, it usually caused fissures; but, however, one instance was observed in which the projectile passed clear through, leaving a perfectly cylindrical track, without any splintering of the bone or the formation of fissure, the wound healing by first intention at the end of ten days. In a few rare cases some explosive effects were noticed.

In penetrating gunshot injuries of the chest, the rule is that scarcely more than one wounded in ten survives, death being generally the result of hemorrhage, or from the consequences of secondary inflammation of the

[1] I must acknowledge my indebtedness for the substance of what follows to Dr. Amador Elgueta's article, published in the *Boletin de Medicina de Santiago de Chile.*

thoracic organs. But in the soldiers who were wounded in the chest by perforation with the Mannlicher ball, it was remarkable to notice that scarcely any complication resulted, not even giving rise to pulmonary abscess or purulent pleuritis, so common in non-perforating gunshot injuries of the chest.

Hemorrhage, both primary and secondary, is undoubtedly the all-absorbing point of attention of the army surgeon, yet it is in this particular that a great humanitarian advance has been made with the modern rifle-ball of very small calibre and cylindro-conoidal form. The projectile of the Mannlicher improved magazine rifle, as exemplified in the recent civil war in Chili, caused but slight hemorrhage, for it actually seared the flesh, and the surface of the whole wound track almost closed itself spontaneously immediately after the passage of the bullet.

Another humanitarian improvement of the modern rifle-ball—especially the nickel-plated, steel-covered one of the Mannlicher, and the cupro-nickel enveloped one of the Lee-Metford—is the comparatively harmless character of the wound inflicted with them, not because of the cleanliness of the projectile at the moment of firing (a theory already well exploded), but on account of the much less extent of complications outside of suppuration, which insures rapid healing.

Regarding the operations performed on the wounded of both sides, after the two decisive battles of Concón and La Placilla, which gave the victory to the present government of the Republic of Chili, I will mention a few of the most important ones, and refer the reader to the interesting reports of Herr Prinz,[1] a German navy surgeon, who served on shore with the Anglo-German ambulance during the Chilian conflict, and that of Dr. E. R. Stitt, U. S. N.,[2] also a personal witness.

In the hospital were made three disarticulations of the hip-joint, with two deaths, following secondary amputation performed according to Verneuil's method, the successful case being that of a primary amputation by Esmarch's method. There were made five resections of the head of the femur, one of which was done by periosteal flaps according to Ollier's procedure, three of them successfully, and two deaths caused by hospital gangrene. Also four resections of the knee, all fatal, in one of which death followed the consecutive amputation of the femur, gangrene being the cause of the general unsuccessful termination. Two disarticulations of the shoulders were performed, both with good result; fourteen resections of the head of the humerus, all with equally good result; and two resections of the elbow according to the method of Ollier, both followed by complete success. Total, five disarticulations with two deaths, and twenty-five resections with six deaths.

Hospital gangrene developed only in ward No. 2 of the St. Augustine

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[1] British Medical Journal, i. 1892, p. 132.

[2] New York Medical Record, February 6, 1892.

Hospital, in which were at the time thirty-two wounded soldiers, sixteen of them being attacked by that most dreadful form of phagedæna. It is noteworthy, nevertheless, that not a single case of erysipelas nor tetanus occurred among the large number of wounded men taken to the Valparaiso hospital, which is a fact that speaks highly for the military medical service of Chili.

In the battle of "Wounded Knee Creek," between the Sioux Indians of South Dakota and the United States troops, December 29, 1890, the Sioux warriors were armed with three different kinds of guns, viz.: Winchester rifles, pattern of 1866, calibre 0.45 inch; Winchester, recent model, calibre 0.38 inch, and the Springfield carabine, calibre 0.45 inch. The United States soldiers were armed with the Springfield carabine, calibre 0.45 inch, weight of bullet four hundred and five grains, composed only of lead, and projected by fifty-five grains of black powder (see Fig. 4).

FIG. 4.



United States Springfield rifle, cartridge (½ normal size), and bayonet.



United States Springfield carabine, and cartridge (½ normal size).

"The wounds resulting from the above were sinuous and irregular, with lacerated edges, and the apertures of exit were frequently much larger than those of entrance. Fragments of clothing, splinters, and pieces of lead were at times left in the wounds by the bullets, which, when permitted to remain, frequently led to long and obstinate suppuration (as instanced in the Indian wounded), often rendering secondary operations necessary." (Official report of Dr. Charles B. Ewing, Captain and Assistant Surgeon, U. S. A.)

To sum up, in conclusion, the theoretical object in civilized warfare is *not to kill but to disable* the greater number of our antagonists, and this humane end is fully accomplished by the Mannlicher improved magazine rifle, whose general advantages over the old rifles are: first, greater initial velocity; second, flatter trajectory; third, greater accuracy of aim; fourth, much greater penetrating force; fifth, considerably greater range; sixth, much less weight of the gun and of the charged cartridge; seventh, the smokeless powder; eighth, only six to seven per cent. foul guns after battle. But to all these improvements we must add the comparatively little harm caused by the projectile, although it remains to be proved to what extent it is desirable that the wounded should not return too soon to the field of battle.

CHLORAL HYDRATE—SOME OF ITS USES.[1]

BY BEN. H. BRODNAX, M.D.,
Brodnax, Louisiana.

In conversation with physicians at various times, I have noticed they viewed chloral as merely a hypnotic, and had used it only for the purpose of relieving pain, thereby inducing sleep. I have been a little surprised at this want of knowledge of its other equally valuable properties. Early in my practice I tried to make a few medicines, combined or by themselves, do all that they would for me, and was led into experimentation with them. Chloral came in for its share, because it relieved pain, quieted the nervous system, and did not paralyze the bowels.

As a *hypnotic*, five grains of chloral combined with laudanum or with one-eighth or one-quarter grain of morphine act splendidly, the combination intensifying the effects of each and depriving the opiate of its stimulating property. With children by itself, in sweetened water, it has no equal; mixed with paregoric, it is also good.

I prepare it as follows: I just cover the amount in my case vial with glycerin,—this dissolves it, and a drop is about a grain. In this form it mixes readily with oil or water and is more quickly prepared, and more easily divided into doses, large or small. With castor oil the dose, one to five grains, renders it less nauseating, and does not gripe, at the same time producing quiet and rest.

It is applied to the skin in eruptive diseases—measles, urticaria—as follows: chloral, ten grains (drops); carbolic acid, ten grains (drops); water or oil, one to two ounces, almost instant relief is experienced from the intense itchings. Or chloral, ten drops, with glycerin and water, each one-half ounce, produces the same effect.

As a mouth-wash: Chloral, ten grains, with glycerin and water, each one-half ounce (a teaspoonful), produces a pleasant cool sensation in salivation, or as a gargle. After holding it for a moment in the mouth it should be rejected and an equal amount of the fresh solution may be swallowed. Carbolic acid (ten drops) added makes it more effective in ulceration of the mucous coverings. It seems to act on the nerves locally, the same as chloroform by inhalation does on the body.

In toothache: Chloral, camphor, glycerin, carbolic acid, equal quantities, applied on a small piece of cotton after cleaning the cavity, will relieve

[1] Read before the Philadelphia County Medical Society by Oscar H. Allis, M.D., for the author, June 13, 1894. This article is not contributed exclusively to the INTERNATIONAL MEDICAL MAGAZINE, but has been sent at the same time to several journals for publication.

the pain. (Cover with more cotton to fill the cavity.) I keep the mixture ready-made, under the name of "toothache drops," in my medicine case. If the patient has lost sleep I give a full dose of chloral by the mouth.

For ulcerated sore-throat, or ulceration from any cause, such as scalds: Chloral, ten to fifteen drops (grains); water one to two ounces, as to age; sugar, to make it palatable to children, a teaspoonful, repeated at short intervals until sleep is induced, then on waking keep them fully under its influence. My first experience was on my only daughter, four years old. The case was so severe I feared I would lose her, and to get rest for her gave as above, after having tried everything else I knew of. The almost immediate relief of all the bad symptoms led me to think the medicine acted *otherwise than merely as a rest-producer*. Since then, for ten years, I have used it with the utmost satisfaction to myself and patients.

Earache: Camphor, ten grains; chloral, ten grains; carbolic acid, ten grains; castor oil, one-half ounce. Drop into the ear warm. Fill the ear full, apply a piece of cotton wet in warm water to fill the external ear, then a cloth wrung out in hot water as warm as can be borne. I have seen some children almost crazed go to sleep in two or three minutes and awake free of their troubles.

As an aid to chloroform in surgery or obstetrics ten to fifteen grains, given twenty minutes before administration of the anæsthetic, seems to intensify the effect and less than one-half of it is needed to produce the desired effect. In my obstetric practice for the last fifteen years I have used it, and have observed but one case where any unpleasant effects were induced. This was in a woman with her tenth child. I gave the chloral to relax the system, ten grains; in half an hour five grains more; in half an hour the chloroform. This combination of drugs deadened her sensibilities so that she acted as if drunk and seemed incapable of ordinary movements. The birth of the child, however, was accomplished quickly and easily. She slept soundly for several hours and awoke all right. She was conscious and would answer questions, but her will-power seemed lost for a while. This was the first time she had taken either of the drugs, and she may have been susceptible. Chloral, given before the anæsthetic, seems to tide patients over the excited stage of anæsthesia. The first few whiffs of the anæsthetic produce quiet without any excitement. I have used it in a few surgical cases with the same effect. In children a full dose of chloral is administered, and when sleep comes on they are anæsthetized in that state, and the force often otherwise necessary is thus avoided.

In coryza, where the Schneiderian membrane is very irritable, chloral, ten grains (or drops); castor oil, one-half ounce, used with a soft mop, applied over the surface, after being dried, acts to check the excretion of mucus, and lulls the irritation and the head-pains.

The supposed influence of the drug on the heart has been urged by my friends against its use. I have not seen any unpleasant effects. In any

case where there is a chance of any cardiac trouble, it is an easy matter to fortify the heart with a $\frac{1}{50}$ grain of nitroglycerin. In one delicate woman I did this as a precaution, but even in her case I believe it was not necessary. This summarizes my experience with chloral, and when I tell you I use from five to six pounds a year, you may know that it has a very considerable scope. I never prescribe it in any quantities, so as to create a "habit." In fact, I do not know of a single case of the kind.

THE ANTISEPTIC TREATMENT OF GONORRHŒA.

BY EDWARD PENDLETON, M.D.,
Owensboro, Ky.

GONORRHŒA is the most common venereal disease with which we have to deal. That it can be acquired late in life is shown by Dr. G. E. Isaacs, of New York, who reports a case in the *Medical Record*, April 14, 1894, occurring in a man aged one hundred and three years. When one hundred years old he contracted chancroids, and at one hundred and three had an attack of gonorrhœa! Many cases are recorded of infants and children having had gonorrhœa. The first attack is usually the severest.

Gonorrhœa is caused by some mucous membrane, usually that of the urethra, coming in contact with some septic poisonous matter, generally derived from one of the opposite sex. Gonorrhœa is highly contagious and infectious. It is a self-limited disease: cases are on record in which no treatment was employed with gonorrhœa, and it has been found to get well after it had run its course, which may be from three to six weeks. The period of incubation after exposure to gonorrhœa is from a few hours to a fortnight. The early symptoms are a red and swollen meatus, slight burning sensation when urinating, the mucous discharge characteristic of the disease is soon noticed, at first especially in the morning.

The complications are balanitis, posthitis, paraphimosis, prostatitis, cystitis, epididymitis, orchitis, bubo, ophthalmia, and retention of urine.

The diagnosis of gonorrhœa is not always easy, but, as a rule, a physician can make the diagnosis inside of six days. Where there is any doubt at the end of this time a microscopical examination of the discharge should be made. If gonococci are present, the diagnosis is certain. It is always well, if possible, to examine the genital organs and discharge of a patient presenting himself for the treatment of gonorrhœa.

The treatment in the acute stage should be the following: Rest in bed for six days. Drink no alcoholic stimulants or coffee; eat as little meat and salty substances as possible; keep the bowels well open by eating fruit daily. Abstain from all sexual excitement, as this produces chordee, which

is a very disagreeable complication. The patient should take a cold bath each morning; this will not only refresh him but will keep him clean. The testes should be suspended in a suspensory bandage, to guard against orchitis.

It is the duty of every physician treating a case of gonorrhœa to instruct his patient how to use the syringe. The patient before using his injection should urinate, then wash the penis, especially the gland, in a warm carbolic acid solution (one to thirty) followed by an injection of simple warm water into the urethra, so as to wash away the pus and render the parts aseptic. Cases are recorded in which patients suffering from gonorrhœa, instead of injecting the solution in the urethra, have injected it under the prepuce. The patient should lie in the recumbent position, previously having washed his hands in a warm carbolic solution. The two drachms of the injection to be used should be poured into a clean cup after shaking the bottle, a syringe with a blunt point should next be anointed with vaseline and the solution drawn up into the syringe. The patient should be taught how to introduce the syringe into the meatus, as a stricture is often produced at the anterior portion of the urethra, due to rough manipulation and an unsteady hand. He should inject the fluid slowly, not forcibly; quite often a posterior urethritis is produced by forcing the pus back of the compressor urethræ muscle. The fluid should be held in the urethra from one to three minutes, when it is allowed to run out. The patient should have a sock with absorbent cotton loosely placed in the toe, so suspended as to catch all of the discharge. It is never well to cover the glans penis with cotton,—in this way the acrid discharge is retained in the urethra; by using the sock the soiled cotton can be changed from time to time when necessity demands. Two strips can be attached to the sock and fastened to the suspensory belt which passes around the waist.

After gonorrhœa has persisted for six days the following injection may be used with advantage:

℞ Acid. borici, ʒii;
Tinct. iodi, ʒii;
Glycerini, ℥i;
Aquæ, q.s. ad ℥iv. M.
Sig.—Inject three times daily.

If great pain on micturition is complained of, a decoction of red saunders and saw palmetto may be given, a teaspoonful four times daily, so as to dilute the urine and render it alkaline. The patient should wash over and around the glans penis night and morning with a carbolic solution one to thirty, followed by cleansing and disinfecting the hands; by so doing he will be unlikely to inoculate any other mucous membrane.

After there has been no discharge of pus for ten days, the patient may be dismissed as well, with the caution that he must be very careful to avoid sexual excitement and dietetic errors.

THE NON-SURGICAL TREATMENT OF FIBROID TUMORS OF THE UTERUS.[1]

BY C. HENRI LEONARD, A.M., M.D.,

Professor of Diseases of Women and Clinical Gynæcology in the Detroit College of Medicine, Detroit, Mich.

BEFORE beginning the discussion of the non-surgical treatment of uterine myomata, it is necessary that I define strictly my ground of reasoning, so that the premises being correctly understood the conclusions will rationally follow.

By the non-surgical treatment I do not mean to be understood as advocating the abolition of any and all operative measures. There are certain minor operative procedures that may have to be done in certain cases, as when from treatment the tumor may assume a polypoid character; in this case, its ablation with the snare, cautery, knife, or scissors is imperative, in order to economize the time and comfort of your patient. But by the non-surgical treatment I mean to ignore all *severe* surgical operations, such as the ablation of the uterus, the ablation of the ovaries, or the tying of the broad ligaments, or their vessels, either through the abdomen or through the vagina.

Histologically, fibroids are of the homologous type of tumors,—that is, have like tissue-elements with the organ in which they are found. In the matter of blood-supply they are very similar to the uterus, in that the mass is supplied very poorly with blood-vessels; in fact, the sinuses of circulation are channels separating layers of the histological cell-elements of the tumor, and these channels are thinly lined with endothelium. Again, the anatomical placement of these tumors must also be considered. We have three general classes of them,—viz., the *submucous*, the *intramural*, the *subperitoneal;* these different names corresponding to the position in which they are found as regards the uterine mass. Here I might state that position typifies somewhat, in my opinion, the age of the tumor. I mean by this that the majority of fibroids of the uterus are, at the beginning, intramural; as they age, their position is changed by the contractile action of the uterus, and the separation of the muscle-bundles of the uterus due to the cellular growth of the tumor within the uterine walls. The result of this is a dislocation of the tumor from its original bed, and its gradual creeping either towards the peritoneal surface or towards the mucous surface of the uterus. Granting this, it follows that at some time of their life all

[1] Read before the Michigan State Medical Society, May, 1894.

forms of uterine myomata are amenable to medical or topical treatment. When, however, the thinning of the uterine wall is towards the peritoneal cavity, then we ultimately get the peritoneal form of the tumor, and one least amenable to non-surgical treatment. Still, in the earlier stages even this type is susceptible to the action of drugs, either administered internally or applied locally. The mucous variety of tumor is specially amenable, as the contraction of the uterine fibres will tend to throw off the offending portion of the uterine growth. The intramural type seems to be equally amenable to our remedies, internally administered and locally applied, on the theory of absorption of its mass by the compression made on it by the normal uterine muscle-fibres stimulated to contraction by our remedies or otherwise.

Before we can come to a rational system of therapeutics, we shall need to inquire how Nature herself deals with these offending growths. She has three ways in which she treats them for the conservation of her patient. The *first* is by utilizing the resistance of the uterine walls to expansion, and thus to set up a retrograde metamorphosis of the embryonic type of tissue-cells of the forming tumor and so secure absorption of the offending mass. *Second*, by a continuation of this pressure unequally over the surface of the tumor she effects a gradual movement of the tumor-mass towards the uterine cavity, thus pedunculating it and finally choking it off entirely. This is the more favorable course. It may, however, be the abdominal cavity instead of the intra-uterine; in this case, if it becomes pedunculated, its growth stops, and absorptive metamorphosis may be expected. In other words, it is rare for a subperitoneal fibroid, after the menopause, to become specially noxious either by its growth or encroachment upon the other pelvic organs. The *third* form of change that Nature induces is the encapsulating of the growth (after a more or less reduction of its size), and the formation of a bony covering to the tumor through the deposition of lime-salts about its surface. This is specially the form to be met with in old tumors (that may or may not have been treated medicinally), where the person has for some time passed the menopause. I have specimens of this class the size of a hen's egg, with a thick covering-shell of lime-salts. This, then, being Nature's way of getting rid of foreign bodies in this organ, we should in our therapeutic methods follow her in her various moods in our plan of artificially producing the same retrograde or conservative changes in the growth, as well as in its placement in or about the uterus. There is a physiological law that comes to our aid in this matter. I allude to the old one of "steady and constant" pressure upon an organ; if that pressure be beyond a certain physiological limit, it will produce absorption. We have one remedy above all others that acts specially upon the unstriped muscle-fibres of the uterus; that remedy is ergot. It is not necessary for me here to go into the discussion of the peculiar and constant action of this drug upon uterine muscle-fibre. Its action is so well known that it is virtually axiomatic. Ustilago maydis is remittent in the contractile effect upon

the muscle-fibre of the uterus, hence is useful only in the later or expulsive stage of the fibroid growth.

Then we have other drugs that aid in tissue and glandular metamorphosis. The iodide of potassium is particularly potent in this respect, and I believe that the bromide is also a remedy of similar though less active action. Then we have the chloride of ammonium as a remedy of marked catalytic action; this has been specially recommended by Professor Goodell, of Philadelphia. Strychnine, or the nux vomica bean, has proved a good remedy in my hands to supplement the oxytocic action of the rye ergot. Quinine I have occasionally made use of, not so much for its oxytocic action, for I think this very slight in the disease now under discussion, but more for its tonic effect when so indicated. It also has an effect to ward off fever ensuing from the topical treatment of uterine disease, analogous to its action in the male in warding off the so-called "urethral fever." I am satisfied that it prevents or limits "uterine fever," if you will allow me to coin a new fever phrase. The absorption of detritus brought on by the administration of diachyticous and catalytic drugs I have fancied set up a rise of temperature similar to that seen in the male from sounding or operating on the urethra. For preventing this I have administered, with what seemed to me good effect, quinine to combat the deleterious effect from such retrograde changes. Then, too, I always administer it before operating on the uterus, vagina, or perineum for its antifebrile effect. I speak of this at some length, as I have never seen the matter referred to in print, though I have frequently referred to it in my lectures at the college. I am satisfied, from an experience of some eighteen years, that the antifebrile action of quinine in uterine cases is not altogether a fancy, but a scientific fact not generally known to the profession.

A few moments ago I spoke of the use of the bromide of potassium. Besides the use of this drug for its catalytic action, I make use of it for still another purpose. I think it markedly steadies the action of the ergot in the ergot's specific action upon uterine muscle-fibre. It also limits the backache symptom that I aim to get in all patients under the "ergotizing treatment" for fibroids. What I mean by steadying the ergot action is that it keeps the action, from the increased dose you are enabled to give, more tetanic in character. The tonic and clonic spasm (of corn ergot) is only indicated when you are so far along as to reasonably expect the pedunculation of your fibroid mass. Furthermore, I think the bromide limits the nausea that you are apt to get from a continued use of the ergot. When this action—antinauseous action—is specially sought, I think the sodium salt is preferable to the potassium salt; the latter having more of a catalytic action than the sodium salt.

In this paper I have purposely omitted all mention of electricity in the treatment of fibroids of the uterus, as I understand there is to be a special paper on the subject this session. In my paper I have undertaken simply the explanation of the rational action of the drugs used in the non-surgical

treatment. I would say that the cardinal principle to be adopted is the administration of ergot, first, last, and all the time. If you cannot give it by the mouth, then administer it by suppository, by bolus, or tampon. I have found that some stomachs would entertain its administration continuously for weeks, and that others would need frequent rests and substitutes. I will also add that though given continuously for months at a time,—in one case fully a year,—I have yet to see the first indication of gangrene from its use.

As to local treatment: the ergot is also here used in connection with its oral administration; or when the stomach rebels, then the quantity locally is materially increased. It is introduced into the uterine cavity in saturated solution; it is poured into the vagina in powder in dessertspoonful quantities mixed with equal parts of tannic acid. Again, it is mixed with glycerin, iodin, carbolic acid, and tannic acid, boluses of cotton being soaked in this solution, then placed in the vagina. It is used in suppositories both in the rectum and vagina. I am satisfied that you get a positive action on the blood-vessels high up in the pelvis, or in the womb, and about the ovaries from this intravaginal application of various astringent drugs. In fact, my plan of treatment is anything and everything to limit the blood-supply to the growing tumor, and so check its enlargement and stimulate the absorption of it when a retrograde metamorphosis takes place, as it surely will take place after a season of this non-surgical treatment of the offending mass.

Now as to personal experience and results. I approach the treatment of this class of tumors with as much confidence of success as I do an ordinary case of version of some time standing. In fact, in all my eighteen years' experience with these tumors I have had but one case defy treatment, and this one died from a surgical operation to relieve her. I never had a case die from a fibroid tumor of the womb otherwise than this one, either from hemorrhage or as the result of my treatment of the tumor.

CLINICAL LECTURES.

LAMINECTOMY FOR PARAPLEGIA FROM POTT'S DISEASE; TENOTOMY OF CONTRACTURED HAMSTRING TENDONS OF BOTH LEGS; AMPUTATION AT THE HIP-JOINT; APPENDICITIS; STONE IN THE BLADDER; SUPRAPUBIC LITHOTOMY.

SYNOPSIS OF A CLINICAL LECTURE DELIVERED AT WESLEY HOSPITAL, APRIL 26, 1894.

BY F. C. SCHAEFER, M.D.,

Ex-Professor of Anatomy, Chicago Medical College; Professor of Clinical Surgery in the Northwestern University Medical School (Chicago Medical College); Professor of Surgery in the Woman's Medical College; Surgeon to Wesley Hospital, Chicago.

LAMINECTOMY FOR PARAPLEGIA FROM POTT'S DISEASE.

GENTLEMEN,—The patient is forty-one years of age; occupation stone mason; weighs one hundred and sixty-five pounds; large frame and strong muscles. Four years ago while lifting a heavy stone he felt a sharp pain in the upper dorsal region of the spine. He has had more or less pain there constantly since that time. Two years ago he noticed a lump coming at the point mentioned. This gradually became more prominent and was tender on pressure. Paralysis has come on gradually since the spring of 1892. He has now had complete paraplegia for eighteen months. On his entering the hospital the following notes were taken:

There is complete loss of sensation and voluntary motion of both legs and feet. He has no control of the sphincters of the bladder or rectum. Patellar reflexes exaggerated. Spastic contractions of the hamstring muscles occur at times. The knees are then strongly bent and it takes all the strength of a strong man to forcibly extend them: they remain rigid in the flexed position. The patient is said to have been inoculated with syphilis five years ago. His doctor told us there was a gumma over the right clavicle, and another one over the right shoulder-blade. These disappeared after the exhibition of the alterative treatment. We gave him iodide of potassium four weeks preceding the operation, but noticed no improvement of his condition.

The day before operating I filled a tumbler with boiling water, pressed it gently against his feet, legs, thighs, and hips. He did not feel its presence. Pin-points over the same area made no impression upon him. Ten days

ago I cut down on the spinous processes of the fourth and fifth dorsal vertebræ, laid bare the vertebral grooves, and lifted the periosteum from the laminæ. I amputated the spinous processes near their bases, and opened the spinal canal by cutting away a large portion of the left lamina of the fifth vertebra where it approached the base of the transverse process. Immediately there came a free flow of tubercular fluid and cheesy substance. There was a communication between the spinal canal and the posterior mediastinum; a probe passed readily into the chest cavity and touched the pericardium, as noted by the pulsation. The instrument vibrated in my hand. The bodies of the fourth and fifth vertebræ were entirely destroyed. The portion of the lamina removed made an opening into the spinal canal large enough to freely admit my finger so as to examine the spinal cord, the sheath of which was considerably thickened. Having discovered that the pathological products of the tubercular process were pressing upon the cord, and finding no other lesion to explain the pressure symptoms, I deemed it advisable after evacuating the fluid not to weaken the supports of the spinal column by removing the entire arch over the cord, believing that the pressure from the "cold abscess" was sufficient to account for the symptoms. Hemorrhage was controlled almost entirely with hot wet compresses. Twenty-four hours after the operation the temperature rose to 104° F.; pulse 180, small and thready. Lips and fingers-nails were cyanosed. The shock from the operation was severe. The sympathetic system was of necessity very much irritated. Hemorrhage was not great for so severe an operation. Twenty-four hours after the operation sensation began to return. The hot-water test resorted to before the operation could not be tolerated forty-eight hours later, and on the third day warm water in a tumbler could be felt and recognized at every part of his limbs, without his seeing what portion was being touched. The spastic contractions ceased after forty-eight hours. Plantar reflexes were partially restored on the third day. On the fourteenth day he bent both of his legs at the knees, flexed the thighs upon the abdomen, and voluntarily extended both of them. He feels that he has legs now; before the operation they seemed "dead" to him. He now calls for the vessel; before the operation was done the urine and fæces came from him without his knowledge.

[NOTE.—Four weeks from day of operation he is very weak, but has perfect sensation, while motion is slowly improving. The abscess cavity is being treated with iodoform emulsion, and is gradually healing.]

TENOTOMY OF CONTRACTURED HAMSTRING TENDONS OF BOTH LEGS.

This lady, aged thirty years, has had chronic rheumatism for six years. Nearly all her joints are deformed. The elbows have but little motion. Many of her finger-joints are immovable, some are ankylosed in the flexed position. Both legs are bent to a right angle at the knees. It is a question whether the patient has had gonorrhœal infection or not. The multiple

arthroidal inflammatory processes certainly assume the characteristics of the gonococcal disease. Her knee-joints were ankylosed. Twice we have chloroformed her and with great force I broke up the adhesions. The joints are now quite movable within certain limits, being restricted by the contractured hamstring tendons which hold the legs at a right angle with the thighs. Having turned the patient on her face, while Dr. McClanahan holds the left leg and stretches the tendons as much as possible by pulling on the leg at the ankle, I feel with my left index finger and thumb for the biceps tendon along the outer border of the popliteal space. The external popliteal nerve runs along its inner side; having the nerve under my index finger, the tenotome is forced vertically along the inner border of the tendon; the point of the knife is now pushed under the tendon outward, the handle being carried downward to the inner side of the knee. The tenotome being directly behind the tendon is turned so as to bring its cutting edge in contact with the anterior surface of the biceps tendon. Dr. McClanahan stretches the tendon a little more by pulling at the ankle, and you hear the crackling of the fibres as they separate. The tendon is severed without moving the knife. The tenotome is made to enter along the outer side of the semitendinous tendon and by a similar manœuvre it is cut. The leg is now readily brought into extreme extension with the utmost ease. Let us proceed in a like manner with the right leg.

Both legs are now perfectly straight, and we place them in extension in trough splints extending from near the groin to the ankle. In about two weeks we will undo the splints, bend the knees a little, and again replace them in extension. After that they will be bent every four or five days. In eight weeks I expect to see the patient walk.

[NOTE.—May 30. The patient sits on chair; can bend the knees to right angle, and extends the legs perfectly.]

AMPUTATION AT THE HIP-JOINT.

Patient, aged twenty-two years. Two weeks ago I amputated this man's right leg at the hip-joint. He came to the hospital six months ago in an extremely septic condition, having been inoculated in the ankle by a corn-cutter with which he was accidentally wounded. Upon entering the hospital he had multiple abscesses extending from the ankle to the groin. The right knee-joint was filled with pus. The tibia was inflamed; there were pus sinuses along the inner side of the thigh and others extending from the knee-joint down to the lower third of the leg. He had septic endocarditis. Temperature, 104° F.; pulse, 160. We made a desperate struggle to save his life; kept him on tonics, whiskey, quinine, and iron. Opened up the sinuses, passed a number of drainage-tubes through the knee-joint, treated the phlegmonous inflammation with continuous warm-water irrigation. When his pulse came down to 130, temperature 102° F., I risked an amputation above the knee to do away with the great suppurative area below. At this time it was my desire to get rid of the entire leg, but feel-

ing assured that a patient in his desperate condition could not live through such a formidable operation, and believing that the chances for saving his life would be increased by removing the leg immediately above the knee, I took the chance. Three minutes were consumed in doing the amputation. Our patient survived the operation. Six weeks later he moved about in a wheel chair. Two weeks ago, as the femur was evidently diseased throughout its length, and the physical condition of the patient having improved sufficiently to undertake another operation, I disarticulated at the hip-joint, ligating the vessels as the dissection proceeded. He is doing well, and I expect to see him on crutches in about three or four weeks.

[May 30. The patient is up. Stump almost closed.]

APPENDICITIS.

This gentleman, twenty-one years of age, has been afflicted with the symptoms of appendicitis since Christmas, 1893, four months. He came here two weeks ago complaining of pain in the hypogastrium. His temperature was 102° F., and he was extremely emaciated. A few drops of pus escaped from the umbilicus, and an abscess tumor was plainly felt in the left iliac region. The history of the case indicated that the inflammation started in the right iliac fossa, and the past symptoms were classical of appendicitis. The disease was accordingly so diagnosed. I was satisfied that the pus had burrowed in front of the bladder and then found its way to the left side, being fortunately extraperitoneal. In my experience this is not an unusual course for the pus to pursue. I have found it in front of the neck of the bladder, giving rise to sufficient bladder irritation to simulate cystitis. In this case I cut down from the umbilicus towards the middle of the *left* Poupart ligament, laid the abscess open, followed the sinus to the front of the bladder, where there was new cicatricial tissue, beyond which the sinus was evidently closed. The abscess cavity was loosely packed with iodoform gauze to serve as a drain. The wound is now about closed. There is no tenderness about the abdomen and pelvis. He walks about the hospital and will return home this week cured.

STONE IN THE BLADDER; SUPRAPUBIC LITHOTOMY.

Our patient is fifty years of age, and has been afflicted with too frequent a desire to urinate for three years. He claims to have passed blood two years ago with the urine, and was treated for kidney-disease. The medicine apparently helped him for a time, but every two or three months the symptoms of urinary trouble returned. He has taken medicines from many physicians and was benefited for a short time by most of them. About six months ago there appeared a deposit like sand in the urine. This caused him to think that he was afflicted with "gravel" in the bladder, as he expressed it. Two weeks ago the pain in the bladder and urethra compelled him to take to bed. It was then I saw him for the first time. There was frequency of micturition, followed by severe pain in the glans penis, and a

constant tenderness in the hypogastrium. Urine was voided twenty to thirty times in twenty-four hours. Rest was disturbed at night. The urine was of strong acid reaction, and frequently caused a burning sensation as it passed through the urethra. The symptoms pointed so strongly to lithiasis as to lead me to at once sound for stone. The calculus evidently lay with its broad side towards the urethra, as the sound struck it the instant it entered the bladder. The click was plainly heard by the patient, who also felt a pulling movement as the stone was pressed against. He immediately came to the hospital in compliance with my advice, and has been under treatment for a week, preparatory to operation. The bladder has been washed out and also distended daily with sterilized water, sometimes with potassium citrate, and occasionally with boric acid solution. Pareira brava and potassium acetate have been administered regularly. He has been kept on a milk diet. This treatment has improved his physical condition very much, relieved the irritable condition of the nervous system, and has rendered the bladder more tolerant to the presence of considerable fluid, as much as six ounces at a time. This preparatory treatment is of great importance in lithotomy; it has much to do, in my opinion, with the successful results.

The patient is anæsthetized. Dr. Waterman inserts the rectal bag into the rectum. This is next distended with ten ounces of water and will force the bladder forward. We also distend the bladder with eight ounces of sterilized water and remove the catheter. The incision is made in the median line, two and one-half inches long, down to the pubic bone. The abdominal wall is very thick, there is about an inch of fat to cut through. The linea alba appears in the field. The knife passes through it; there is little hemorrhage thus far. Having cut through the fascia transversalis, the fat in front of the bladder comes into view immediately behind the pubes. Several large veins cross it. It will be well to pick these up with two forceps and cut between them. With a little dissection the bladder wall is exposed below the peritoneum, quite deep in the wound. Let us distend the bladder a little more. It now contains three additional ounces of water, and the anterior wall of the viscus comes forward. You can plainly see it. Gently seizing the bladder wall with tenaculum, I make a vertical incision through it and at once insert my left index finger into the viscus. A portion of the water has escaped. The stone lies loose near the neck of the bladder. My finger is hooked under it; there its border appears in the wound. With a pair of forceps it is easily grasped. Pressing it back with the forceps my finger is withdrawn to make room, and the stone is extracted. It is oval in form, one and three-quarters inches long, one inch wide, and one-third inch thick, very hard and smooth, and looks like a stone picked up on the beach. It is evidently a uric acid calculus. The crystals of uric acid were recognized in the urine under the microscope yesterday. As the urine is strongly acid, the bladder will be washed out with an alkaline solution daily. A Trendelenburg drain is

next inserted to serve as a siphon. This tube will be retained *in situ* from seven to fourteen days, and a catheter will be retained a portion of the time. The wound is closed with silkworm-gut and dressed antiseptically.

[May 20. The patient is convalescent.]

A CASE OF CARCINOMA OF THE LIVER.[1]

A CLINICAL LECTURE DELIVERED AT THE MEDICO-CHIRURGICAL HOSPITAL.

BY J. M. ANDERS, M.D., PH.D.,
Professor of Medicine in the Medico-Chirurgical Medical College, Philadelphia.

GENTLEMEN,—Of all the diseases occurring in the liver, we find none more interesting or instructive than that of carcinoma. Mrs. B., aged fifty-nine years, and married, will furnish us a suitable case for our consideration to-day. Family history absolutely negative as regards malignant disease of any kind. About one and a half years ago the patient had a severe attack of what she supposed to be indigestion. At that time there was a feeling of distress and fulness after eating, accompanied by persistent burning pains in the epigastrium, which three months later radiated to the right hypochondriac region. She applied to her physician for relief, but continued to grow steadily worse, and six months ago some swelling was noticed in the right hypochondrium which increased rapidly, extending down to the right iliac crest. The ribs covering the base of the right chest bulged markedly and the pain was intense and agonizing, being referred to the right shoulder. Four weeks later jaundice appeared for the first time, and soon involved the whole body, being accompanied by pruritus. To-day, as the patient lies before us, the jaundice is still well marked, and an erythematous eruption covers the body, which has been produced by her efforts to relieve the itching, which is most distressing. The etiological factors in a case of carcinoma are few. The age of the patient, fifty-nine years, is a predisposing cause, the disease occurring most frequently between the ages of forty and sixty years. The exciting cause is not known. A few authorities claim it to be due to mechanical irritation produced by gall-stones in passing through the ducts from the gall-bladder to the intestine, especially in females, in whom attacks of hepatic colic most frequently occur. We have, however, no history of colic in this case. Primary carcinoma of the liver is rare: three forms are recognized, which vary from a pathological stand-point. First, the *nodular* form. Here the organ is moderately enlarged in advanced cases. Small nodules varying in size from a pea to a walnut are scattered throughout the liver or may be confined to certain areas. A case of this kind came

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[1] Reported by Dr. A. M. Davis.

under my observation six months ago, in which at the autopsy no evidences of primary disease were found; the pyloric region (in which it often occurs), intestines, stomach, rectum, spleen, genito-urinary organs, and heart having been apparently normal.

The second variety of primary cancer is the large, massive form, the lower portion of the liver being usually affected and not the entire organ. In this form the enlargement is usually in a downward direction, and no nodules are detected by palpation. The affected portion is firmer in consistency than normal hepatic substance, and presents a yellowish-white appearance, which is sharply defined from the surrounding liver structure.

The third and rarest variety is that of waxy cancer with cirrhosis, the differential diagnosis between the two affections being often impossible until after death. The size of the organ is often diminished throughout, the whole being infiltrated with small cancerous nodules (two to ten millimetres in diameter), and these surrounded by connective tissue which undergoes contraction. On making a section of the liver, a number of diffused points are seen, consisting of yellow masses, surrounded by cicatricial tissue. While primary cancer of the liver is rare, that of the ducts and gall-bladder occurs more commonly. Primary cancer of the ducts is more important than of the liver and occurs a little more frequently. Secondary carcinoma of the liver is of common occurrence, and may follow primary disease of any organ of the body, although occurring most often secondarily to cancer within the portal area,—*i.e.*, œsophagus, stomach, pancreas, intestines, or rectum. The circulation of the liver being slow, a sufficient time is allowed for the cancer-germs to find a resting-place and develop. The primary growths may open into branches of the portal veins, giving rise to metastasis. When the liver is the seat of secondary growths, these are numerous and large, usually varying in size from a small hickory-nut to an apple. They may be scattered over the surface of the organ or may occur in the interior, or both. When on the surface they present dimpled or depressed, flattened projections, which are often palpable through the abdominal wall, the umbilications felt in the centre of the nodules being pathognomonic of this disease. Extensive cancer of the liver may occur with entire absence of physical signs or clinical symptoms, as in some instances the nodules are favorably situated so as not to impede or obstruct in any way the portal circulation. If primary cancer of the pylorus exists, always suspect secondary involvement of the liver, or if cancer be present in the stomach, pancreas, intestines, or other viscera, together with the occurrence of jaundice and ascites, whether or not nodules can be felt on the surface of the liver, we have almost conclusive evidence of secondary cancer of that organ. As a rule, carcinoma of the liver is easy of recognition.

The case before us presents a characteristic condition, and physical signs are present sufficient to establish a positive diagnosis. On inspection we have prominence in the region of the liver extending to the hip. The patient is anæmic and much emaciated, although not markedly cachectic in appearance.

The abdominal muscles are relaxed and flabby, enabling us to see plainly the mass moving up and down with respiration. On palpation we feel the enlarged organ, the lower edge of which can be made out easily. The margin is irregular in outline, due to the cancerous nodules, and on the anterior surface flattened protuberances are felt, one large nodule showing the characteristic umbilication. If, by inspection and palpation, some enlargement be detected in the hepatic region, be sure it is connected with the liver and not caused by involvement of some other organ. The up-and-down movement of the mass during respiration is not always as plainly visible as in this case. The patient should be asked to take a long, deep breath; and if the existence of the mass be established by inspection and palpation, careful percussion should be made: flatness, if connected with the liver, will extend as far downward as the surface of that organ, whereas if the tumor be connected with the stomach or transverse colon, deep percussion will give muffled tympanitic resonance. If the mass is surely connected with the liver, we should next try to eliminate primary carcinoma of adjacent structures,—*i.e.*, pylorus, omentum, or transverse colon. In cancer of the pylorus the clinical history of the case would show it to be of longer duration. The growth would be nearer the median line of the abdomen than in this instance, and would not move during respiration as in carcinoma of the liver, except cohesion had taken place between the liver and the pylorus. Jaundice and ascites would, however, be absent, together with the absence of umbilicated nodules. When multiple nodules are detected by palpation, the case is almost invariably one of cancer of the liver. If occurring in the omentum or transverse colon, it is often difficult to diagnose. We may be guided, however, by the presence of a movable mass in the epigastric or umbilical region, *not* influenced by respiration, together with entire absence of symptoms of portal obstruction, such as jaundice, ascites, etc., which, with the clinical history of the case, will aid us in the diagnosis. But other growths besides carcinoma are found in the liver. *Adenoma* may occur, but is very infrequent. *Angiomata* are not rare, occurring most frequently in children and young people. *Sarcomata* of the liver, especially of the melanotic variety, are, according to most recent authors, of frequent occurrence, and usually secondary to tumors of the same character affecting the choroid, skin, spleen, kidneys, etc. Clinically, symptoms are present pointing to involvement of these organs. Cancer of the liver is most generally secondary to carcinoma of the pylorus or one of the organs, as before stated, lying within the portal zone. A few clinical features which characterize many cases of melano-sarcoma of this viscus may be briefly pointed out here, and they will serve to distinguish this affection from the disease under consideration, namely, cancer of the liver.

Bear in mind that the discriminating features have their origin in other organs than the liver, though the latter is the seat of tumor.

Involvement of the kidneys is shown frequently by a palpable, uneven

tumor in the renal region; the urine voided is dark in color, or becomes so on standing for twenty-four hours. It contains blood-pigment.

The spleen is engorged quite commonly in melanotic sarcoma (quite rarely in cancer of the liver). Various eye phenomena develop, such as sudden and total blindness, or, it may be, tumor of the retina. In another class of cases an eye has previously been extirpated for tumor. Melano-sarcomata may also be observed quite frequently in the skin.

Syphilis of the Liver.—This disease is hard to eliminate. In cancer we have the subjective symptoms, the electric pain referred to the right shoulder with the appearance of jaundice, and, in the later stages, the development of cachexia. Syphilis, whether acquired or congenital, may be one of two forms; either that of a diffuse hepatitis with the formation of connective tissue leading to contraction, or circumscribed gummata, the latter varying in size from a pea to that of an apple, and appearing on the surface as flattened hemispheres or protuberances. They frequently occur where Glisson's capsule enters the liver or where the suspensory ligament is attached, and, if favorably situated, physical signs and symptoms may be entirely absent. If, however, the neoplasms occur on the anterior surface, physical signs are present. The nodules may cause obliteration of the branches of the portal vein, and then ascites will develop together with enlargement of the spleen and liver, or they may press on the trunk of the portal vein with the rapid development of ascites. Various gastro-intestinal symptoms are common in syphilis of the liver, and persistent nausea and vomiting often occur; but these may also appear in cancer. Ascites is common in syphilitic disease but less common in cancer, whereas jaundice is more often associated with cancer. Again, on making physical examination in a case of syphilis of the liver, we find the organ somewhat enlarged during the middle period of the disease but smaller in the later stages, whereas in cancer enlargement steadily increases as the disease advances. Projections also occur on the surface of the liver in syphilitic disease, the nodules differing from those of cancer in being more smooth, flattened, hemispherical in shape, and in having no central dimpling or depression. In every instance where nodules might be due to syphilis, study the history of the case. Absence of infection, of scars in the mucous membrane of the mouth and throat, of irregularities in the long bones, would render the differential diagnosis comparatively easy. Cancer runs a rapid painful course, without intermission. In syphilis we have a protracted and at times painful course with remissions and intermissions.

Hydatid cysts of the liver may also be mistaken for carcinoma. The clinical history of the two diseases, however, differs, hydatids occurring most often in those who are associated daily with animals, as in the case of Icelanders. They are of slow course and unaccompanied by pain or evidences of gastro-intestinal disturbances, whereas in cancer there is much pain radiating to the right shoulder, with jaundice, ascites, and rapid emaciation. Inspection over the region of the liver in hydatid cysts reveals a

much larger protuberance than in cancer; not nodular but in the form of flattened hemispheres which are somewhat elastic. These may be multiple, in which case the differential diagnosis is rendered more difficult.

In certain cases of cancer the nodules are small, the surface of the organ being smooth, and clinical symptoms are almost *nil*, thus making the disease difficult to distinguish from that of waxy, amyloid, or fatty liver. In the latter we have a history of prolonged suppuration, or of bone-disease probably tubercular in origin, and entire absence of gastric symptoms, jaundice, or cachexia. Enlargement of the spleen also occurs in this disease (not in cancer), and albumen is often present in the urine, showing evidences of amyloid disease of the kidneys. A form of amyloid disease of the liver rarely occurs in which gumma may be present; but the history of syphilitic infection, with evidences of tertiary lesions of the skin, mucous membranes, and long bones, will assist in making the diagnosis. Evidences of portal obstruction may be present, but these are rare.

Hypertrophic Cirrhosis.—In this disease we have very often a distinct alcoholic or specific history, together with absence of malignant disease occurring in the family. Gastric irritability with morning vomiting occurs early, and jaundice is an early and persistent symptom. The disease runs a very protracted course, and is painless. The organ presents an irregular surface (not nodulated) and is enlarged downward, and this together with the insidious onset and the history of the case should serve to separate it from the disease under consideration. Cancer of the liver may occur with cirrhosis, but the condition is rare and extremely difficult to diagnose. In the early stages the organ shows some enlargement with the appearance of cancerous nodules in other places; later, contraction takes place with the development of the cancerous cachexia. Syphilis of the liver may occur in this connection, and if this disease can be eliminated, the diagnosis of cancer with cirrhosis may be established.

These are the most common affections of the liver which have to be differentiated from carcinoma. After the diagnosis is positively made the question presents itself whether the disease is primary or secondary; this being often very difficult to answer. Cancer of the pylorus often occurs primarily and may adhere to the liver, giving rise, on physical examination, to apparent enlargement of the latter, the mass moving up and down during respiration; or the primary growth may affect the gall-ducts or gall-bladder, carcinoma of the liver being often secondary to these. Cancer of the biliary ducts cannot always be detected by physical examination. Persistent and intense jaundice with absence of cancer in the other organs occurs, and later the characteristic nodules may be developed secondarily in the liver. The course of the disease is not so rapid until secondary involvement of the liver occurs. Sometimes the gall-bladder can be palpated, the organ being large in the early stages and rapidly undergoing diminution in size, with the occasional development of ascites.

The duration of a case of cancer of the liver is brief as compared with

cancer of many of the other viscera. The average course of the disease is from six to nine months, but may vary from three to eighteen months. Sometimes the disease proves rapidly fatal, as in the case of a stout woman I saw last year, in whom death occurred, without the appearance of marked cachexia, just six months from the onset of the symptoms. The prognosis is, of course, utterly hopeless, and friends or relatives should be told of the patient's condition as soon as the diagnosis is made certain. The treatment of carcinoma of the liver is merely symptomatic, consisting in the use of means to render the remaining days of the sufferer as comfortable as possible.

In the patient before us the disease is advancing rapidly, the cachexia is becoming marked, and the organ increasing almost perceptibly in size. At our next clinic, one week hence, we will note and compare her general condition with that of to-day.

REVIEW OF MEDICINE.

MEDICINE.

IN CHARGE OF JUDSON DALAND, M.D.,

Instructor in Clinical Medicine and Lecturer on Physical Diagnosis in the University of Pennsylvania; Assistant Physician to the Hospital of the University of Pennsylvania; Physician to the Philadelphia Hospital and to the Rush Hospital for Consumptives.

The Treatment of Nephritis. (*Medical News*, April 21, 1894.) By J. M. Da Costa, M.D., LL.D., of Philadelphia.

In a typical case of recurring acute nephritis passing but five ounces of urine daily, ten drops of digitalis were administered every three hours, which, though strengthening the heart, produced no diuresis. Later, thirty grains of lactate of strontium were given four times a day, and the quantity of urine secreted on the second day thereafter was thirty-five ounces, and later, forty-eight ounces were passed in twenty-four hours, even after the digitalis had been withdrawn. The author attributes the diuretic effect produced to the use of the lactate of strontium in connection with a restricted milk diet and rest in bed.

The musical murmur which was heard was due to aortic stenosis permitting of regurgitation. The orifice was narrowed, more especially at one portion, where there was a free edge of membrane vibrating in the blood-current, or a fragment of a valve flapping to and fro.

The lactate of strontium was used in a second case of acute nephritis occurring in a cirrhotic kidney, with an increase in the quantity of urine from thirty ounces before taking the strontium to fifty-seven ounces two weeks after admission.

In a third case of cirrhotic kidney the same quantity of lactate of strontium was used,—namely, thirty grains daily,—and the quantity of urine, which on admission was forty ounces daily, slowly increased. The author especially advises the use of salts of strontium in *acute* renal affections.

Angiocholitis and Cholecystitis. (*Semaine Médicale*, January 24, 1894.) By MM. A. Gilbert and S. A. Dominici.

Three cases of suppuration of the biliary passages due to the bacillus of Escherich are reported, the first in a woman of fifty-three years dying from obstruction of the gall-duct by a calculus. In addition to purulent angiocholitis there was a peritoneal abscess beneath the liver as large as a quince. In the second case, a woman of thirty-three years suffered from repeated attacks of hepatic colic, and the autopsy showed cancer of the gall-bladder, complicated by suppurative angiocholitis, suppurative general peritonitis, and vegetative endocarditis of the mitral valve. The bacillus of Escherich was found in the pus from the biliary and subhepatic abscess and the splenic juice in the first case, and in the pus from the biliary abscess and blood from the myocardium in the second. The organism was also found in the blood of mice which had been inoculated. The third case was a woman of twenty-five years with chronic icterus. Puncture of the liver permitted the removal of a small quantity of blood, which, when cultivated, gave a number of the bacilli of Escherich. Cholecystotomy was performed, and the bile was collected as soon as the gall-bladder was opened, the biological examination revealing the same micro-organism.—*Universal Medical Journal*, March, 1894.

Cardiac Murmur in the Pyrexia of Children. (*Asclepiad*, Third Quarter, 1893.) By Sir Benjamin Ward Richardson, M.D., F.R.S.

The author has observed for many years a cardiac murmur in children suffering from inflammatory or epidemic disease, and narrates an illustrative case occurring in a patient suffering from measles. There was a loud, sharp, but musical systolic murmur, the temperature being 101.5° F. He believes this murmur due to increased tension of the bi- and tricuspid valves under the influence of quickened cardiac action and high temperature. He considers it of common occurrence, and of no serious import, and has observed the same murmur in healthy children after rapid exercise.—*Universal Medical Journal*, March, 1894.

On the Diagnosis and Treatment of Fæcal Impaction in Enteric Fever. (*The Australasian Medical Gazette*, February 15, 1894.) By A. G. Cribb.

Two fatal cases of enteric fever are reported ; in one the obstruction was in the lower three feet of the ileum, and in the other the colon was filled with scybalous masses weighing several pounds. The diagnosis was most difficult. In the first case there was an alarming collapse, and an indefinite paroxysm of pain, but no vomiting ; apparently no constipation shortly

before death; no distention or borborygmi; no anuria, and no fæcal tumor could be detected by palpation. The second case was even more obscure, as there was no sudden collapse; no pain; no serious or prolonged constipation; no distention nor borborygmi, and no fæcal tumor could be detected even after repeated and careful examinations were made with this object in view.

The author believes that so long as there is high temperature no laxative should be employed, excepting castor oil in small doses, and that large enemata would be safer. When there is no fever laxatives and enemata may both be employed, and he advises large doses of olive oil, or moderate doses of compound liquorice powder. He also makes use of massage and electricity.

[Fæcal impaction is not uncommon, and should be promptly treated by the early use of evacuant enemata. When, as in the first case, the fever has disappeared for a week, the process of repair has gone on, so that the danger of large enemata given slowly and cautiously is not great. In these cases benefit would be derived from the use of a quart and a pint of warm water placed in a fountain syringe, suspended at an elevation of four or five feet, and introduced into the bowel by means of a soft rubber stomach-tube. This tube should be introduced at least ten inches, so as to pass above the sigmoid flexure. This liquid should be allowed to enter slowly, and not less than fifteen or twenty minutes should be occupied in delivering three pints. This simple measure may be repeated if the first attempt is not successful.—J. D.]

A Case of Recurrent Symmetrical Local Asphyxia of the Extremities. (*St. Petersburger medicinische Wochenschrift*, April 23, 1894.) By J. Israelsohn, M.D.

The case reported by the author occurred in a child, aged three years, that was rachitic and anæmic. The skin of the hands and feet was deep-blue—almost black—in color, and this extended to the ankle and wrist-joints. For one year the child suffered from subcutaneous œdema, and a very careful examination showed no abnormality excepting a moderate anæmia. This asphyxia of the extremities was treated by vigorous rubbing with warm spirits of camphor, and in about ten minutes the cyanosis disappeared. Afterwards digitalis was advised. On four subsequent occasions, at intervals of two and three days, the same symptoms recurred.

The Diagnostic and Prognostic Importance of Leucocytosis. (*Boston Medical and Surgical Journal*, March 22, 1894.) By Richard C. Cabot, M.D.

The author defines leucocytosis as being the presence in the blood of an increased number of white cells of the same varieties morphologically as those in normal blood, a plurality and generally an overwhelming plurality being polynuclear. The author makes the remarkable statement that

leukæmia occurs without increase in the white cells, and based his diagnosis on the presence of a very large number of myelocytes. After mentioning the peculiarities of leucocytosis occurring during digestion, in pregnancy and in children, the author states that the leucocytosis which occurs in typhoid fever points to some complication, such as thrombosis, pneumonia, abscess, etc. He considers that the absence of leucocytosis differentiates typhoid fever from local suppurations, purulent meningitis, thrombosis, pneumonia, appendicitis, etc. The author believes that leucocytosis is present in scarlatina and absent in measles, and hence may be useful in making a differential diagnosis. Stress is laid upon the fact that, as a rule, there is leucocytosis in most of the diseases where pus is present.

The author summarizes his results as follows. "Only in typhoid and in pneumonia does the number of counts which I have made warrant any conclusion. The absence of leucocytosis in typhoid and its presence in pneumonia (except in the severest cases) seem to me fairly well established and of some diagnostic and prognostic importance."

"The number of cases counted among the surgical affections is too few to warrant any conclusions; but they are sufficient, it seems to me, to make it important that the subject of leucocytosis in surgical cases should be studied much more carefully, with a view to its practical diagnostic value. If a felon with half a drachm of pus in it will cause marked leucocytosis, it certainly seems as if the diagnosis of deep-seated suppurations of larger size might be helped out by blood-examinations, as apparently it was in some of the appendix and osteomyelitis cases I have quoted."

Functional Insufficiency of the Valves of the Left Heart. (*Revue de Médecine*, September 10, 1893.) By Dombrowski.

This author, in discussing the question of inorganic insufficiency of the mitral valves, states that he does not believe that it is usually caused by dilatation of the mitral orifice; that this orifice is surrounded by a tendinous ring, the resistance of which is not easy to overcome. In one case he removed the heart from the cadaver, ligatured the aorta, and then, through an opening made at the apex, forced in water under strong pressure, in spite of which the valve allowed no leakage. He quotes Wulf as stating that the surface of the mitral valves greatly exceeds the size of the orifice. Kirschner and Garcin believe that the anterior leaflet alone suffices to cover the mitral orifice, even when the left heart is considerably dilated. The author believes that the cause of the insufficiency is due, in many cases, to muscular dilatation producing a separation of the insertions of the papillary muscles, which in systole cannot approach each other near enough to allow the valves to close, the contraction of the papillary muscles only increasing the difficulty, and he therefore prefers the term "functional" to that of "relative" insufficiency.

The insufficiency of the aortic valves he believes to be rare, and is usually relative, depending on a dilatation of the aorta, resulting from in-

creased blood-pressure followed by atheromatous changes in the artery. He considers it a terminal symptom, the precursor of death, and its recognition clinically is of considerable prognostic importance. It never occurs under fifty years, is associated with the signs of general atheroma, and is slow and insidious in its development. There may be a long history of symptoms of increased intravascular pressure, oppression, palpitation, and vertigo, to which may be added the signs characteristic of aortic dilatation,—namely, pulsation in the neck, dulness under the manubrium, and the metallic quality of the aortic second sound.—*Boston Medical and Surgical Journal*, March 22, 1894.

[This explanation of mitral insufficiency is unquestionably true in the majority of cases, as I have convinced myself from the post-mortem examination of a large number of hearts that have been carefully studied during life. A very moderate displacement of the papillary muscles changes immediately the direction in which they would exert traction, thus permitting of regurgitation through the mitral orifice, which would quickly disappear as soon as the dilatation was overcome.—J. D.]

THERAPEUTICS.

IN CHARGE OF ALEXANDER D. BLACKADER, B.A., M.D.,
Professor of Therapeutics, McGill University, Montreal, Canada.

ASSISTED BY

D. I. EVANS, M.D.

On the Treatment of Enteric Fever with Lactophenin. (*Centralblatt für Innere Medicin*, No. 11, 1894.) By R. v. Jaksch, M.D.

The writer has lately used lactophenin to a considerable extent in his clinic. It is a new drug introduced by Schmiedeburg, in which the acetic acid of phenetidin is replaced by lactic acid. It comes in the form of a fine crystalline powder, soluble in water, with a slightly bitter but not unpleasant taste. It has been strongly recommended in influenza and articular rheumatism. The writer has used it with apparently good results in the treatment of enteric fever. Eighteen cases were treated by it alone; some of them were severe, with much prostration, hypostatic pneumonia, or other complication. The drug was given in from one-half to one gramme doses, and repeated several times a day according to its antipyretic and sedative effect. In one case, nausea and vomiting were induced by the first dose, but on repetition of the drug these symptoms passed off; in two other cases, for a brief period, there was slight irregularity of the pulse. The great advantage claimed for lactophenin by the writer is its sedative action; delirium vanishes, the mind becomes clear, and the patients experience a pleasant subjective feeling, such as is given by no previous method of treat-

ment. The desire for food appeared early in all cases, and with the exceptions mentioned there appeared to be no depressing or toxic action from the drug.

Bichromate of Potassium as a Remedy in Gastric Affections. (*Lancet*, April 14, 1894.) By Thomas R. Fraser, M.D.

Notwithstanding the strong recommendation given by Vulpian in 1883 as to the value of this drug in many forms of gastric disorders, it has not yet taken any position among the many substances used in the treatment of these affections. The writer, however, has used it lately in the Edinburgh Infirmary with much success. In eighteen cases of prolonged gastric distress, with pain in the epigastric region, the relief it afforded was comparatively prompt. It also proved of much value in ten additional cases where symptoms of gastric ulcer had been or were at the time present. The dose administered varied from one-twelfth to one-sixth grain thrice daily, on as empty a stomach as possible. In general, it was the smaller only of these doses that was given. It may be given either in pill or in solution, and there is no difficulty generally with the latter mode, especially if some simple flavoring is added. He attributes the action of the drug, in part, to a strong antiputrefactive power, but thinks the drug has also more or less of an analgesic action on the gastric mucous membrane.

On the Therapeutic Action of Ferratin. (*Prag. medicinische Wochenschrift*, April 18, 1894.) By Dr. Hugo Wiener.

This is a new iron preparation first introduced by Schmiedeburg, and by him obtained from hog's liver, but lately it has been prepared artificially. It is an albuminate containing six per cent. of iron. It is said that it can be employed directly by the system in the formation of hæmoglobin, inasmuch as it disappears from the liver of the dog when it is fed on food containing little or no iron. It is very assimilable, can be given in large quantity without in any way disturbing the stomach. Of twenty cases treated with this preparation in Prof. Von Jaksch's clinic, all have given favorable results more quickly and with less systemic or local disturbance than is usual with other preparations of iron.

The Treatment of Chronic Diseases of the Heart by Baths and Exercises according to the Method of Dr. Schott. (*London Lancet*, May 5, 1894.) By William B. Thorne, M.D.

The writer, in an interesting paper, strongly advocates the treatment of many cases of chronic disease of the heart by these means, and gives his experience with these agencies. In this system forces are brought to bear upon the heart by bodily exercise and by certain outward applications in the form of baths, and are regulated in such a way as not only to avoid injury to the heart, but to endow it with such recovery of function and repair of tissue as may constitute it actually or practically sound. The baths most

frequently employed in this system are those at Nauheim, containing chloride of sodium, chloride of calcium, salts of iron, and a proportion of natural carbonic acid, made to vary according to circumstances, and possessing a natural temperature of from 88° to 95° F. Baths may, however, be prepared artificially to fulfil almost, if not quite, the same therapeutic purpose. Their mineral strength, their duration, and their frequency may all be increased as the treatment proceeds, and, at the same time, their temperature in some cases may be reduced. An interval is imposed after each second, third, or fourth bath taken in daily succession, and each bath is followed by an hour's rest in the recumbent position. The effect of these baths, properly carried out, is said to be a reduction in the frequency and an increase in the force of the heart-beat, and cutaneous excitation, with relief to congested viscera, and stimulation to circulation generally; as a consequence of this, we meet with a sense of refreshment, a stimulation of the appetite, and an eventual gain in weight. The exercises have been denominated by their designers as *Widerstandsgymnastik*. They consist in movements calculated to bring into successive and regulated action almost every collective system of voluntary muscles. The patient is instructed to breathe slowly and regularly during their performance, and to warn the attendant of any approach to palpitation. It is the office of the latter to resist each of the prescribed movements with a measure of force which just falls short of that which would be necessary to arrest it. Care is taken that the same movement is not practised twice in immediate succession. As a rule, the exercises are not persevered with for more than half an hour, but at all times they should be regulated by the physician in attendance. To this end the dimensions of the heart and the character and quality of its sounds are ascertained before and after each series of exercises, and, if necessary, intermediately. The effect on the pulse is to materially increase its force; while a diminution in the size of a dilated heart may be noticed within a short time, a diminution in the frequency of its action may be delayed for a few days. While it is acknowledged that at the first not the whole of this is a permanent gain, yet by daily repetition in time it becomes so. Dr. Theodore Schott, as the result of observations extending over some eighteen years, affirms that benefit may be expected to accrue in all cases of chronic heart-disease, whether of valvular or parietal incidence, except where such conditions have led to or coexist with either advanced myocardial or arterio-sclerotic degeneration, or with aneurism of the heart-wall or of a large vessel.

Treatment of Atonic Gastric Dilatation. (*Münch. med. Wochenschrift*, March 20, 1894.) By C. Wegele, M.D.

This writer recommends that in slighter cases of atonic dilatation a dry diet be employed. Too vigorous and too prolonged persistence, however, in the regimen may be a disadvantage. Washing out the stomach in these cases is often of much service, freeing it of acid and fermenting contents.

The writer thinks it best when done in the morning. The plan of raising the foot of the bed he considers useful in helping to empty the pyloric antrum. If fermentation is present he adds harmless antiseptics to the water with which the stomach is washed, and also gives internally such drugs as creosote, bismuth, or salicylic acid. If the washing is repeated at all frequently, nourishment is withdrawn from the patient, which should be supplied by rectal alimentation, else the patient's weight and nutrition will suffer. Sometimes it may be sufficient to order a strictly dry diet, and supply the necessary water by the rectum. In cases where the abdominal walls are lax a broad sustaining-belt is of much service.

The Non-Alcoholic Treatment of Typhoid Fever. (*The Medical Pioneer*, April, 1894.) By Sir B. W. Richardson, M.D.

This is a report on the Treatment of Enteric Fever without the use of Alcohol, in the London Temperance Hospital. From 1873, the date of the foundation of the hospital, to 1893, the number of cases treated was one hundred and forty-four. Of these, twenty-five proved fatal, but four of these were said to be moribund on admission. Excluding these we have a mortality of fifteen per cent., a success not enough to establish any superiority for the treatment, and indeed comparing indifferently with that of some other hospital returns. The writer properly insists on the necessity for comparison not only of a large number of cases, but of observations extended over a number of separate epidemics. The variation of fatality in different epidemics and seasons is so great that the inferences drawn from the mere treatment are apt to be misleading. Another point of much moment in comparing cases is the element of age. Referring to this paper, the *London Lancet* (May 12, 1894) says, "The question raised by Sir B. W. Richardson is not a new one. It was raised in one sense by Dr. Todd, and in a very opposite sense by Professor Gairdner, who has been among the most powerful, as he was among the earliest, advocates of an extremely careful and limited use of alcohol in typhoid fever."

On Malakin. (*Wiener med. Blätter*, Nos. 11 and 12, 1894.) By Dr. O. von Bauer.

In this paper Dr. Bauer gives us the results obtained by the use of malakin in the wards of Professor Drasche in Vienna. Malakin is a salicylic derivative, combining to some extent the action of salicylic acid and phenacetin, and has been used for its antirheumatic, antipyretic, and anodyne action. It is insoluble in water and alcohol, but is soluble in an alkaline soda solution. Its taste is slightly bitter. The writer draws the following conclusions as the result of his observation: (1) Malakin has a distinct antirheumatic action, but a less certain one than salicylic acid; it rarely produces tinnitus aurium; (2) it lowers the temperature and reduces the subjective symptoms of fever; its antipyretic action, however, is less than that of antipyrin and phenacetin. Dr. Bauer thinks it will prove serviceable in

those cases where heart weakness or idiosyncrasy renders the employment of those drugs inadvisable. Malakin may be given in half-gramme doses, and be repeated at intervals of a few hours according to its effect and the result to be attained.

Dr. F. Merkel (*Münch. med. Wochenschr.*, April 24, 1894) has used malakin in eighteen cases,—fifteen of acute rheumatism, two of enteric fever, and one of neuralgic pains in typhlitis. He states that its action is very mild, and that no unpleasant after-effects are noticed. As an antirheumatic it produces a decided improvement in the articular manifestations. The writer looks upon malakin as an addition to our resources where other remedies fail.

SURGERY.

IN CHARGE OF HENRY R. WHARTON, M.D.,

Demonstrator of Surgery and Lecturer on Surgical Diseases of Children in the University of Pennsylvania; Surgeon to the Presbyterian Hospital, the Methodist Episcopal Hospital, and the Children's Hospital; Consulting Surgeon to the Presbyterian Orphanage.

AND

JOSEPH P. TUNIS, A.B., M.D.,

Assistant Demonstrator of Surgery in the University of Pennsylvania; Surgeon to the Dispensaries of the Presbyterian, Methodist Episcopal, and Children's Hospitals.

Remarks on Intra-cranial Surgery, with a Method of Ascertaining the Relations of the Cerebral Convolutions to Scalp Surface. (*Edinburgh Medical Journal*, June, 1894.) By John Chiene, M.D., F.R.C.S. (Ed.), of Edinburgh.

The experience which Dr. Chiene has gained from his intra-cranial operations has led him to adopt the following views:

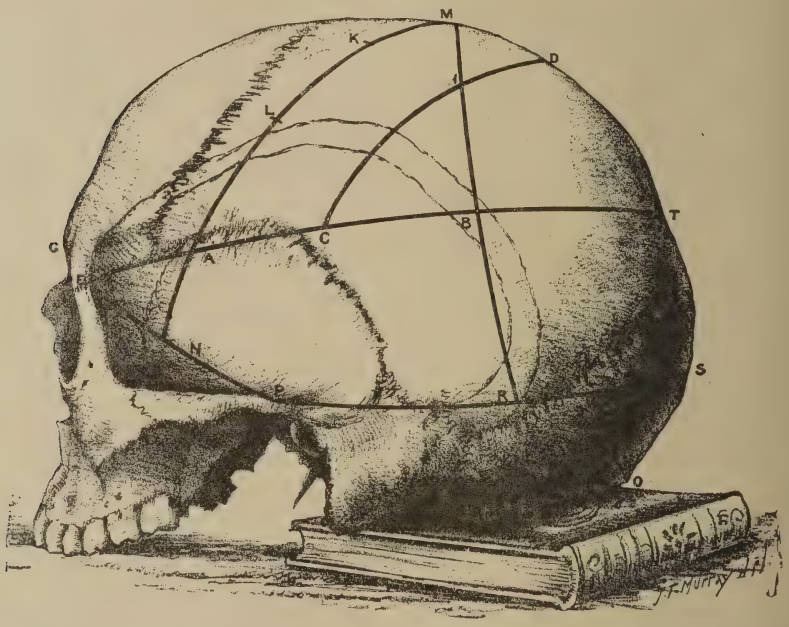
1. In epilepsy marked good has arisen from operating upon cases of a distinctly traumatic origin, particularly in those cases in which the injury involved the motor areas in the neighborhood of the Rolandic fissure. In the future more extensive removal of the calvarium should be and will be practised. By asepsis hernia cerebri has been robbed of its chief terrors.

2. In tumors relief has only been temporary, from the fact that the writer has never yet had a distinctly encapsulated tumor to deal with.

3. In abscess, both frontal and temporo-sphenoidal cases have been operated upon. In frontal abscess, more stress should be laid upon the slowness of the pulse, and not so much upon tenderness on percussion. In suspected cases of temporo-sphenoidal abscess an early diagnostic incision, making first for the roof of the petrous portion of the temporal bone, and working forward if the examination of the eye indicates pressure either on the third or sixth nerves or on the cavernous sinus, backward if there be an absence of eye symptoms. An irregular temperature is the diagnostic sign in septic thrombosis of the lateral sinus. In this class of cases Dr. Chiene has met with no success.

4. In intracranial hemorrhage the skull should be opened to relieve pressure in non-traumatic cases, indicating intracranial hemorrhage with coma. In traumatic hemorrhage, whether intra- or extra-dural, the first symptoms that arise after the patient has passed out of the state of concussion and before hemorrhagic compression has occurred should be most carefully noted. Depressed bone is not believed to be a cause of persistent compression. Trephining is not done to elevate depressed fragments, but in order to be able thoroughly to purify the injured area.

There is much needed a simple, easily-remembered, and trustworthy method of localizing the relations of the temporo-sphenoidal lobe in connection with ear-disease, the supra-marginal convolutions in puncture of the lateral ventricle, the angular convolution in word-blindness, the occipital lobe in lesions of sight, etc. For this purpose the following plan is suggested: After the head is shaved, the mesial line of the skull between the



Skull showing Dr. Chiene's lines for localizing important brain centres. (Reduced two-thirds from the original cut.)

glabella (G) and the external occipital protuberance (O) is divided into the mid point (M), the three-quarter point (T), and the seven-eighth point (S). The external angular process (E), and the root of the zygoma (P), immediately above and in front of the external auditory meatus, are then found.

Having found these five points, join EP, PS, and ET. Bisect EP and PS at N and R. Bisect also AB at C, and draw CD parallel to AM.

The pentagon ACBRPN corresponds to the temporo-sphenoidal lobe, with the exception of its apex, which is a little in front of N.

MDCA corresponds to the Rolandic area, containing the fissure of Rolando, the ascending frontal and the ascending parietal convolutions. A is over the anterior branch of the middle meningeal artery and the bifurcation of the Sylvian fissure; AC follows its horizontal limb.

The lateral sinus at its highest point touches the line PS at R.

MA = the precentral sulcus, and if it be trisected at K and L, these points will correspond to the origins of the superior and inferior frontal sulci.

The supra-marginal convolution lies in the triangle MBC.

The angular gyrus is at B.

Spina Bifida to be Treated as Hernia. (*North American Practitioner*, May, 1894.) By Weller Van Hook, M.D., of Chicago.

The author points out the great value of the open method of treatment in spina bifida as compared with the injection method. In the latter, although the method is easy and available in remote places, the obliteration of the sac seems the only aim, while in the former the nerve elements may be replaced, the meninges joined by sutures, and the spinal cord closed by plastic methods.

A comparison of the statistics of the two operations shows a percentage slightly in favor of the open method. The researches of Hildebrand relating to the anatomical conditions found in the different grades of defects in spina bifida, from rachischisis posterior, the severest form, to simple meningocele, are quoted as giving additional evidence that the indiscriminate use of the injection of iodine is unjustifiable.

After discussing briefly the indications for operation and the most suitable time as concluded by Bayer, the writer gives the different methods of operation by excision under four heads:

1. Simple excision of the superfluous sac-wall, with suture of the remainder of the meninges and of the skin.

2. The method of Mayo Robson and of Bayer; the same as the first method together with suture of the muscles or fasciæ over the defect.

3. Osteoplastic or chondroplastic methods (Senenko, Botroff).

4. A combination of excision with suture of the sac, plastic operation upon the muscles or fasciæ, and osteoplasty.

The method chosen will depend on the indications in each case. The osteoplastic methods should be used whenever the patient is able to bear a long operation. Bone should "be supplied by an incision and bending down of the unclosed laminæ or by the use of a periosteum and bone-graft from the ilium (Senenko), or ribs (Botroff), supplied with a nutrient flap."

Heteroplastic methods are condemned, as by the demonstration of Barth the bone implanted does not live and grow but serves as a framework for the growth of new bone.

In the treatment of nervous structures no nerve elements are to be sacrificed. If nerve-trunks or an area vasculo-medullosa are found in the

sac, they are dissected out and replaced in the spinal canal, and the sac-wall is sutured to hold them in place.

The Effects of Compression of the Common Carotid Artery. (*British Medical Journal*, May 5, 1894.) By Leonard Hill and B. Moore.

These observers repeated the experiments made by Schiff several years ago in compressing one of the common carotid arteries. Hill compressed the left common carotid and obtained sensations of formication and tingling spreading down the right side of the body and accompanied with feelings of vertigo. The experiment was tried again, a few days later, with the result of the production of half a dozen clonic spasms of the right hand, vertigo again occurred, followed by nausea lasting some minutes. On repeating the experiment a third time a sensation of numbness and pricking was felt in the left eye, followed by a sense of formication and numbness passing down the right arm, right leg, and then up the left leg. After the pressure was withdrawn the sensation increased in intensity in the right hand, which twitched three or four times. Great dread of touching the region of the artery was felt for some time.

Moore experimented on the right common carotid, and experienced first a succession of inspiratory spasms, then sensations in the right eye and three or four flexions of the left hand and fingers. Pallor, sweating, vertigo, and nausea followed.

In the experiments of both these observers consciousness of movement arose entirely from the centripetal sensory impressions; consciousness of peripheral sensations arose first of all as an illusion from the central stimulation due to the sudden anæmia, and, secondly, from the real peripheral sensations due to the passive movements of the arm. The views of Munk and Mott as to the nature of the results arising from the ablation of this area were confirmed.

Thirdly, the full force of the teachings of Hughlings Jackson as to the origin of spasm in man from pathological changes in this region of the cortex was felt, as with the exception of inspiratory spasm the results could not have been produced by stimulation of the vagus or sympathetic nerves.

OBSTETRICS AND GYNÆCOLOGY.

IN CHARGE OF RICHARD C. NORRIS, M.D.,

Demonstrator of Obstetrics in the University of Pennsylvania; Physician to the Preston Retreat; Consulting Obstetrician and Attending Gynæcologist, Southeastern Dispensary and Hospital for Women and Children.

Intraligamentous and Retroperitoneal Tumors of the Uterus and its Adnexa. (Abstract of a paper read before the American Gynæcological Society, on May 29, 1894.) By W. H. Wathen, M.D., of Louisville, Kentucky.

Dr. Wathen said, "That, while paroöphoron cysts and retroperitoneal myomata of the uterus and its muscular processes have nothing in common in their etiology, he would include both kinds of tumors, because the technique of the operation for their successful removal is practically identical. With few exceptions cysts that unfold the layers of the broad ligament and burrow deep into the pelvis and retroperitoneal connective tissue, often developing nearly continuity in relation to other structures, probably arise from the remnants of the mesonephros in the paroöphoron. Either the cystic or solid tumor may separate the peritoneum anteriorly and lie in front of it attached to the bladder, fascia, and muscles of the abdominal wall, the separation sometimes being so extensive that it may be possible to reach the tumor and enucleate it through a median incision between the pubes and the umbilicus without wounding the peritoneum. The peritoneal separation, however, is usually from the posterior pelvic and abdominal walls; the tumor having passed beneath Douglas's sac unfolds the mesorectum, mesocolon, or mensentery of the small intestine; or, passing under the appendix, the cæcum, or the ascending colon, lies between them and the abdominal walls. The blood-vessels that cause the most hemorrhage in enucleation are confined mainly to the capsule, and these vessels are sometimes huge sinuses, and especially is this true when the tumor has unfolded the mesentery of the rectum, the colon, or the intestine."

After reporting five illustrative cases, he said, "No one should attempt the removal of intraligamentous or retroperitoneal tumors who is not familiar with the normal relations of every pelvic and abdominal viscus and the relations that these tumors may sustain to surrounding tissues, otherwise he is at sea without a compass, and the immediate and subsequent results of his work will be bad. He should know that these tumors are mainly supplied with blood from the ovarian and uterine arteries, and that successful enucleation depends largely upon a correct ligation of the vessels. The dangers of the operation which should be anticipated are,—

"1. Hemorrhage from separated adhesions, from the capsule of the tumor, from the denuded surface of a myoma, from injury to the spermatic and uterine arteries, the iliac arteries and veins, and inferior vena cava.

"2. Wounding the ureters, the bladder, and the intestines. The causes of death are hemorrhage, shock, and sepsis. The results of the operation depend mainly upon controlling hemorrhage and successful enucleation.

"To prevent injury to a ureter that may be in front of the tumor it is best to incise the capsule and introduce ligatures *parallel* to the abdominal wound; in incising the capsule avoid large vessels. Hemorrhage will be greatly lessened by careful enucleation close to the cyst-wall or the substance of a myoma, thus pushing the vessels in the capsule and in the connective tissue away from the tumor without wounding them. If the spermatic arteries have previously been ligated near the uterus and near the pelvic walls, the enucleation may sometimes be completed without wounding a vessel large enough to cause troublesome hemorrhage,—in fact, it may be

possible in some cases, by enucleating close to the tumor and the uterus, to perform total hysterectomy without ligating the uterine arteries, they being pushed aside and left in the pelvis uninjured. Great care must be observed in separating the tumor from the bladder and the intestines, otherwise these organs may be wounded, or the coats so injured that sloughing may result, and when the enucleation has reached the prævertebral space careful dissections must be made, always hugging the tumor, avoiding the ureters or deep-seated vessels. As gum tubing cannot be used in many of these cases, hemorrhage may be controlled by forceps, separate ligation, ligation *en masse*, or a continuous suture; and hemorrhage from the substance of a soft cavernous myoma may be controlled by firm gauze pressure, or ligation *en masse*, the ligature being introduced deep under the bleeding vessels with a long curved needle. Forceps should be so shaped as to be readily applied to any part of the separated capsule, and the surface of the blades should be comparatively smooth, and the edges so rounded as not to cause hemorrhage by cutting through the thin and fragile walls of the vessels." He presented two forceps (Figs. 1 and 2) of his own device that well illustrate

FIG. 1.



FIG. 2.



Dr. Wathen's abdominal forceps.

this point. Adhesions should be separated if possible between forceps and ligatures. The cyst should always be tapped before enucleation is begun, and when this is done the calibre of the vessels in the capsule contracts. If hysterectomy is necessary total extirpation is preferable, for we cannot get sero-serous union over the uterine stump, and unless this can be done the cervix ought to be removed. If possible, it is best to ligate the uterine arteries outside of the ureter before they give off branches that supply the

upper part of the vagina and cervix, otherwise ligate them close to the cervix to prevent injury to the ureters. The patient should be in the Trendelenburg position, so that the different structures and their relations may be seen as we proceed.

In conclusion he said, "There is no fixed opinion or uniform practice in the treatment of the sac cavity. It is drained through the vagina; through the abdominal walls, with or without suturing the capsule to the abdominal wound; or it is not drained at all. If hæmostasis has been nearly perfect and the operation aseptic, drainage is not necessary, and then in total extirpation the vaginal vault should be closed by interrupted sutures." The paper was closed by quoting an extract from a letter of Dr. Bantock upon the method and advantages of suturing the sac cavity in the abdominal wound and draining with a glass tube.

OPHTHALMOLOGY.

IN CHARGE OF CHARLES A. OLIVER, A.M., M.D.,
Philadelphia, Pennsylvania,
AND
EDMUND LANDOLT, M.D.,
Paris, France.

Cauterization of the Sclerotic in Detachment of the Retina. (Cauterizacion de la Esclerótica en el Desprendimiento de la Retina. *Revista de Ciencias Medicas de Barcelona*, February 25, 1894.) By José Presas, of Santa Cruz.

This writer reports detailed histories of three very interesting cases of detachment of the retina, in which he was enabled to improve the sight and to enlarge the field of vision for periods of time averaging six months, by repeated applications of heated thermo-cautery points to the superficial layers of that portion of the sclerotic which was nearest to the point of detachment. He claims that reaction is very moderate.

A New Electro-magnet for the Removal of Particles of Steel from the Eye. (Ein neuer Elektromagnet zur Entfernung von Eisensplittern aus dem Auge. *Beiträge zur Augenheilkunde*, January, 1894.) By Professor O. Haab, of Zurich.

By the employment of a fixed electro-magnet of about two feet in length, Haab has been enabled to force quite large pieces of steel directly through the vitreous and lens into the anterior chamber. The instrument, which consists of two coils of copper wound around a double-pointed cylinder of soft iron, is so arranged on a stand before which the patient rests that a current of electricity, of about twenty-five ampères' strength, can be passed through the contrivance.

From a practical experience extending over a number of interesting cases, the author asserts the superiority of this form of mechanism over the smaller varieties of similar instrumentation.

Subvolution—A New Pterygium Operation. (*Journal of the American Medical Association*, March 24, 1894.) By Boerne Bettman, M.D., of Chicago.

In order to avoid the possibility of recurrence of pterygia by overcoming the union of the cut surface of the conjunctiva with either the raw surface of the dissected corneal area or the proliferated portion of the corneo-scleral margin, Dr. Boerne Bettman has resorted to a device which he terms subvolution. The essential feature of the procedure, as the name implies, consists in the turning under of the flap so as to place a mucous surface in contact with a raw one, and thus prevent adhesion.

After the ordinary method of dissecting a triangular part of the membrane free from the underlying cornea has been accomplished, a double-needled suture is passed through the loosened apex of the growth, so as to leave the loop upon the outer surface. The needles are then carried back beneath the growth, which has thus become subvoluted, as it were, and they are then passed through the base. The thread is tied sufficiently tight to bring the edge of the roll of tissue just to the corneo-scleral margin.

DISEASES OF THE LARYNX, NOSE, AND SURROUNDING STRUCTURES.

IN CHARGE OF J. PAYSON CLARK, M.D.,

Physician for Diseases of the Throat, Massachusetts General Hospital; Physician to the Throat Department, Boston Dispensary.

Operation on the Nasal Septum. (*Journ. Am. Med. Assoc.*, November 25, 1893.)—Dr. H. H. Curtis cautions against operating on the septum of hæmatophiles, or of a person whose blood contains less than seven per cent. of oxyhæmoglobin. One "should not interfere with a deflexion unless there are reflex or direct troubles arising from the stenosis produced." The relief of a nasal stenosis is often an important factor in the cure of anæmia in a young person. In three cases the writer has seen a severe attack of gout develop within three days after a septal operation in a gouty subject. The writer describes his *modus operandi* and gives rules for controlling hemorrhage after nasal operations.

The Clinical and Pathological Features of Atrophic Rhinitis. (*Medical Press*, December 27, 1893.)—Dr. V. H. Wyatt Wingrave bases his conclusions on personal observations in sixty cases of this disease. The

writer finds hyaloid bodies in the stratified epithelium, which, as the disease progresses, break up into minute refractile particles resembling spores. Their parasitic nature is still in doubt. In fifty-six cases the faucial and pharyngeal tonsil had entirely disappeared. In most cases the teeth were more or less decayed. In ten cases free bone could be felt on probing the ethmoidal cells. The ages varied from fourteen to fifty-nine, the majority being between seventeen and twenty-five. Only eleven were males. There was a definite history of phthisis in thirty-seven and of abscesses of the neck (not syphilitic) in eighteen cases. The odor was perceived by the patient in twenty-seven, and by the observer in fifty-seven cases. Anosmia was present in thirty cases, supranasal pain in thirty-eight. Microscopic and bacteriological examination of the crusts gave little information of value.

Treatment of Naso-Pharyngeal Fibro-Myxomata. (*Revue de Laryngol., d'Otol. et de Rhin.*, November 15, 1893.)—Dr. Wagnier reports three cases of large myxomata, or myxo-fibromata of the naso-pharynx, which, by a process of kneading with the forefinger introduced into the naso-pharynx, were very considerably reduced in size. In the first case a very short kneading was followed by such a reduction in the volume of the tumor that it could be easily seized in the snare. In the second case, in which the tumor filled the naso-pharynx and descended to the free border of the soft palate, kneading so diminished its size that the writer was able to wind the pedicle about his forefinger and extract the growth. In the third case treatment was interrupted, after two short sittings, on account of an intercurrent malady. The growth, however, was left very much reduced in size.

Intubation and Tracheotomy. (*Journ. Am. Med. Assoc.*, November 25, 1893.)—Dr. W. B. Johnson reports nineteen cases of intubation with six recoveries, one resulting from tracheotomy after intubation had failed. The ages of the patients varied from fourteen months to nine years. The cause of death was extension of the membrane to the bronchi in two cases, sepsis in three, asphyxia in one, cardiac paralysis in two, pneumonia in two, exhaustion in two, and dyspnœa in one.

Eight Cases of Syphilitic Stenosis of the Larynx. (*Journ. Am. Med. Assoc.*, November 25, 1893.)—Dr. J. Mount Bleyer recognizes three classes of cicatricial web-formation, namely, the supraglottic, the glottic, and the infraglottic. The web is cut under cocaine anæsthesia by means of Lennox Browne's laryngeal dilator with cutting blades. A large-sized hard rubber intubation-tube is then introduced. Cold compresses are applied to the neck, and the larynx is occasionally irrigated and sprayed with a ten-per-cent. solution of cocaine for forty-eight hours. The tube should be worn for two weeks, being removed daily for cleansing.

Report of Seventy Cases of Intubation. (*Med. Record*, November 25, 1893.)—Of these cases, reported by Dr. R. J. Stanton, sixteen terminated fatally, while twenty-four (thirty-four and three-tenths per cent.) recovered. With two exceptions all were tenement-house cases. Fourteen deaths were caused by extension of the membrane to the bronchi, five by sepsis, four each by asphyxia and pneumonia, three by uræmic convulsions, and two each by exhaustion, pulmonary œdema, nephritis, and bronchitis. Three cases were afterwards tracheotomized.

Some Remarks on the Structure of Œdematous Nasal Polypi. (*New York Medical Journal*, November 4, 1893.)—The material upon which Dr. Jonathan Wright made his observations was obtained from about one hundred and fifty individuals. About twenty-five furnished the nasal polypi. Cylindrical epithelium, occasionally ciliated, is the variety that usually covers polypi. The cylindrical type changes occasionally in certain places to the squamous. This change is probably due to friction. The stroma consists of a net-work of areolar tissue, the size of the meshes being determined by the amount of serous infiltration, of which there are all degrees. "There is no homogeneous groundwork taking a deep-blue stain with hæmatoxylon and dotted with branching eosin-stained cells as in typical myxomata." The œdema is always most marked at the most dependent parts, but does not penetrate the epithelial layer. The watery nasal discharge is probably due to the irritation of the growth on the surrounding mucous membrane. The mechanism of the production of the fluid in the polypi is a matter of speculation. "Clinical observation and histological study suggest that it is caused in some way by an antecedent chronic inflammation of the nasal mucous membrane." It contains serum-albumin and large quantities of mucin. The exudation of small, round cells into the stroma is frequently very marked. Differentiation in nasal pathological histology between granulation tissue, lymphoid hypertrophy, and small round-celled sarcoma is often difficult.

Œdematous nasal polypi contain much fewer glands than normal tissue. Glands are relatively more abundant as the serous infiltration is slight. Blood-vessels are scanty and small. Cyst-formation is occasionally a striking feature. Microscopically, a large number of glands may be seen in various stages of degeneration. A glandular cyst might go on growing in a polyp until it occupied the whole of it. Occasionally a cyst is formed by a dilated blood-vessel. Hyaline bodies, fat-cells, or spiculæ of bone the writer has never seen in the growths. Nasal polypi have not usually the character of myxomata.

Atresia Nasi Externi. (*Journ. of Ophthal., Otol., and Laryngol.*, October, 1893.) By E. Elmer Keeler, M.D.

This writer reports the case of a boy, nine years of age, with complete

closure of the nares by skin which was "as smooth as though skin-grafting had been resorted to."

This condition had resulted from constant picking at the nose during a severe attack of typhoid fever. The nares were opened by means of a galvano-cautery knife. The operation had to be performed three times, owing to the tendency which the nostrils showed to rapidly close again. Finally soft-rubber tubes had to be worn in the nostrils, more or less constantly, for over a year before it could be said that all tendency to contraction had been overcome.

Congenital Osseous Obliteration of the Choanæ. (*Annales des Mal. de l'Oreille, du Larynx*, etc., January, 1894.)—A. Gouguenheim and L. Hélary report a case of this rare affection. The patient, a girl of fifteen, had the adenoid type of face. A mass of adenoid vegetations was found in the pharynx. The left choana was completely obstructed by a smooth bony wall. Anterior rhinoscopy discovered nothing peculiar. There was pronounced deafness in the left ear and the sense of smell was completely abolished. The adenoid growths were first removed. Attempts to pierce the bony wall with the galvano-cautery were unsuccesful. Under cocaine anæsthesia it was perforated with a drill (the Eustachian prominence being protected from injury) and the opening enlarged with the galvano-cautery. A second opening was then made, and the two united by means of the galvano-cautery. Over a year later the respiration was good, hearing much improved, and sense of taste normal.

Severe Hemorrhages from the Nose. (*The Post-Graduate*, March, 1894.)—W. Freudenthal reports three cases of severe hemorrhage from the middle turbinated bodies. In the first case the use of the galvano-cautery on the left middle turbinate was soon followed by a tremendous rush of blood from the nose. After several trials the writer succeeded in tamponning the nostril and arresting the hemorrhage, not, however, until the patient had become quite anæmic from loss of blood. The hemorrhage recurred again three or four times in the following fortnight. The patient was no bleeder. She had diabetes, but the writer does not hold this fact responsible for the tremendous bleeding following such a mild treatment. The two other cases of severe hemorrhage were cases of vicarious menstruation. Both cases were at the menopause and had had epistaxis at monthly intervals for several months. Finally each had a hemorrhage so severe that it was with difficulty stopped by plugging. Both patients recovered from these attacks.

Osseous Cysts of the Middle Turbinates. (*Rev. de Laryngol., d'Otol. et de Rhin.*, December 1, 1893.)—Dr. R. Beausoleil reports two of these rare cases. In the first case the nose was full of polypi, both middle turbinates were cystic and contained polypi. In case two the left middle turbinate was affected. This was removed with the cold-wire snare, cutting-

forceps, and scissors. The galvano-cautery snare was used in the other cases. All cases reported are adults and all are women. The cysts may be uni- or multilocular. They are generally filled with air, but may contain mucus or a viscous thick material. A polypoid degeneration or polypi are also generally present. Calcareous incrustations may be formed from the salts contained in the nasal secretion. These cysts may develop from the lower turbinate. The progress is generally slow. The prognosis is good.

Treatment of Diphtheria. (*Revue Internat. de Rhinol., d'Otol.*, etc., November 25, 1893.)—Dr. Lescure reports thirty-three hospital cases of diphtheria treated by the following method, with only four deaths. A forty-per-cent. chromic acid solution was used locally. The child being well immobilized and the tongue depressed, the false membranes are touched with a brush containing several drops of the chromic acid solution. These applications should be made so as to penetrate the membranous exudation, also touching lightly the mucous membrane for a distance of two to three millimetres around the patch. The pharynx is then washed by means of a large brush with a solution of carbolic acid twenty-five parts in one thousand, to neutralize the excess of chromic acid. In mild cases one application daily is sufficient. In grave cases twice (very exceptionally three times) in twenty-four hours is enough. Daily applications are to be continued until the patches have disappeared. The writer uses a special instrument for keeping the mouth open and depressing the tongue. The following solution is also applied three or four times in twenty-four hours for its antiseptic, tonic, and astringent effects: tannic acid, six grammes; glycerin, thirty grammes. General treatment is tonic and sustaining. The extension of the disease to the larynx did not occur. Of the four cases that died, one entered the hospital with laryngeal diphtheria and no false membrane in the throat, the second was brought in moribund, while in the other two the system had already become generally infected by the poison. The advantages of this treatment are the infrequent applications necessary, the absence of pain, the fact that the integrity of the mucous membrane is not disturbed.

Guaiacol as a Topical Application in the Treatment of Acute Tonsillitis. (*Med. Record*, March 24, 1894.)—Dr. J. H. Raymond, from his experiments with this drug, believes that it is entitled to be considered a valuable remedy in acute tonsillitis. Marked relief was obtained in the majority of cases treated. A fifty-per-cent. solution of guaiacol in oil of sweet almonds was tried, but was found not as efficacious as the pure drug, which was used in most of the cases. The applications are made by means of a cotton swab dipped into pure guaiacol and applied over the surface of the tonsils, care being taken to prevent it from getting into the larynx. The application is attended with quite a little smarting, lasting usually only one to five minutes. A previous application of cocaine seemed rather to

aggravate than prevent the smarting. In the superficial or lacunar variety, the inflammation was terminated far more speedily than in the phlegmonous. In many instances the attack did not last more than forty-eight hours, and in none did suppuration occur.

Indications and Limits of Topical Treatment in Laryngeal Phthisis. (*La Semaine Médicale*, April 4, 1894.)—Lennox Browne says that, contrary to general opinion, the improvement of the general health and of the lungs is not the cause, but very often the direct effect, of local treatment of tubercular lesions of the upper respiratory passages. The author concludes, from the results of treatment in one hundred and two cases of laryngeal phthisis studied by eight observers, that the chances of recovery, and even of improvement, depend to a large degree upon the coexistence and extent of pulmonary disease. The use of morphine is not advised except in hopeless cases; nor cocaine except for intralaryngeal curettage, for applications of lactic acid, or for the temporary relief of dysphagia. All medicaments except lactic acid should be applied as a spray. Menthol alone, or combined with iodol, dissolved in oil is one of the best remedies in the stage preceding ulceration. The curette may be employed to destroy the hyperplasia, to remove dead matter from the large ulcerations; it may also occasionally be of value prior to the application of lactic acid. Lactic acid, to be really efficacious, should be employed with friction. Puncture and incision of infiltrated tissues should be avoided, as they produce no favorable result and hasten the development of ulcers. Extirpation of the arytenoid cartilages is not to be advised. Tracheotomy should not be performed in tuberculosis of the larynx.—*The Universal Medical Journal*, May, 1894.

CLIMATOLOGY.

IN CHARGE OF GUY HINSDALE, M.D.,
Lecturer on Climatology in the University of Pennsylvania, Philadelphia.

Physiological Effects of Mountain Climates. (*Lancet*, June 2, 1894.) By C. Theodore Williams, M.D.

Dr. Williams, in an address on climate in relation to health, says, "The circulation is at first quickened and the heart's impulse increased in power, but at the end of six or eight weeks the pulse-rate becomes less rapid, and it eventually is slower than normal. The same is true of respiration. The quickening of the circulation and respiration is accompanied by thirst, by a reduction in the blood-pressure and in the urea excreted by the kidneys, but more carbonic acid and water are eliminated from the lungs, as might be expected from more oxygen being inhaled. Later, when acclimatization is complete, the normal amount of urea is again excreted and the blood-pressure increases. Chest measurements increase. The effect of high-altitude climates

on healthy persons is excellent, and on most forms of phthisis it has been shown to far surpass in results any other set of climatic agents. At the same time this is a two-edged weapon, and in many cases of disease, such as those of the heart, liver, and brain, and in emphysema and bronchitis, as well as in the case of the aged and those with weakly constitutions, it must be avoided as most harmful."

Dry Climates of Low Altitude in California. (*Canadian Practitioner*, February, 1894.) By P. H. Bryce, M.D.

In an article on Climates favorable to Comsumptives, Dr. Bryce agrees with almost all other writers on California that the San Gabriel Valley, and other similar valleys in about the same latitude, of 35° N., running mostly northwesterly, and sheltered on the north by the foot-hills of the Coast Range and on the east by the Sierra Madre Mountains, are the particular centres of this Edenic land. There seem only two particular blots on this paradisiacal picture, the one being the fogs which occasionally arise, owing to the moisture from the ocean meeting a cold mountain current, and the other being dust winds, which sometimes blow for several days together, and are irritating, hot, and very disagreeable. These arise from the fact that the whole plain country, where not irrigated, is almost devoid of vegetation, except sage bush and cactus; in fact, is a partial repetition of what may be seen on the foot-hills of Eastern Colorado and New Mexico.

Farther inland, however, are found wooded cañons which, the writer can readily imagine, possess an almost ideally perfect climate, and are yearly becoming the homes of hundreds in search of health, and who are making a living there by ranching and fruit-growing.

PATHOLOGY.

IN CHARGE OF ALLEN J. SMITH, A.M., M.D.,
Professor of Pathology in the Medical Department of the University of Texas, Galveston, Texas.
AND
HENRY W. CATTELL, A.M., M.D.,
Demonstrator of Morbid Anatomy in the University of Pennsylvania; Prosector to the American Anthropometric Society; and Pathologist to the Presbyterian Hospital, the Institution for Feeble-Minded Children at Elwyn, etc.

Studies upon Typhoid Fever, Experimentally Produced. (Études sur la fièvre typhoide expérimentale. *Annals de l'Institut Pasteur*, April 25 and June 25, 1894.) By Joseph Sanarelli, M.D.

These articles supplement one upon the same subject published in November, 1892, in the same magazine, in which the writer records experiments made for the purpose of exalting to the maximum the pathogenic power of the virus of typhoid fever.

By the first method a subcutaneous injection in the back of a guinea-pig of 0.5 cubic centimetre of a fresh bouillon culture of the *bacillus typhosus* is followed by an injection into the abdomen of twelve cubic centimetres of a fresh culture of the *bacterium coli communis*, or of the *proteus vulgaris*, or of a meat infusion a month old sterilized to 120° C. The animal dies in from ten to twelve hours, and a culture is made from the exudate found in the peritoneum. These cultures are carried through a series of animals and increase in virulency at each step, until 0.3 or 0.4 cubic centimetre of a bouillon culture of the *bacillus typhosus* will kill a guinea-pig in from twelve to twenty-four hours. The amount of the culture injected into the abdomen is reduced in each animal until the *bacillus typhosus* becomes so virulent that generalization by another organism is unnecessary.

Fresh cultures of the *bacillus coli*, the *proteus vulgaris*, and the meat infusion contain indol, and develop the pathogenic power of the *bacillus typhosus* to a greater extent if used before the indol disappears.

By the second method the virulence is increased by passing the virus through a series of animals until a drop of a culture made from the exudate from the peritoneum kills a guinea-pig in from twelve to twenty-four hours. After passing through a series of thirty animals the virus is not susceptible of a greater increase in virulency. The pathogenic power is not retained for a long time outside of a living organism; the cultures found in laboratories are usually only slightly pathogenic.

In his recent articles, Dr. Sanarelli considers (1) the action of the typhoid toxin on rabbits, guinea-pigs, and cats; (2) the intestinal lesions of experimental typhoid fever; (3) the toxic lesions and the *rôle* of the intestinal microbes; (4) vaccination in experimental typhoid fever and its effects on the intestinal microbes.

The results obtained by experiment may be stated briefly as follows:

1. The bacillus of Eberth in the organism produces a very active toxic substance which acts on the nerve-centres and by rapid poisoning causes death by collapse.

2. The typhoid toxin exerts a very energetic action on all the mucous membranes, and especially on the intestinal mucous membrane, producing venous congestion, extensive infiltrations, hypertrophy of Peyer's patches, swelling and detachment of epithelium.

3. The anatomical changes in the digestive canal produced by the action of the typhoid toxin, independent of the presence of microbes, are analogous to those found in typhoid fever in the human being.

4. In experimental typhoid fever, as well as in that of human beings, the bacillus of Eberth is not usually found in the intestinal canal.

5. Its absence being due to two reasons: first, because typhoid fever is an infection of the lymphatic system only; there the virus localizes itself by preference, multiplies, and secretes its poison; secondly, the action of the toxin on the intestinal walls produces grave anatomical and functional alterations which cause the *bacterium coli communis* to become pathogenic, it

multiplies itself extraordinarily, and by annihilation of other species tends to become the sole representative of the intestinal flora.

6. The enormous development which takes place in the *bacillus coli communis* under the influence of the typhoid toxin constitutes the principal cause of the secondary infections and localizations by the *bacillus coli.*

7. If, however, the *bacillus coli* emigrates from the intestine under the influence of the typhoid toxin, when the animal is in part vaccinated against typhoid fever, it never determines a general infection, but, according to the degree of immunity acquired, develops chronic inflammatory processes in the serous membranes, which finally may be cured.

8. The vaccine used for typhoid bacilli also destroys the *bacterium coli;* the latter begin then to disappear from the intestine where it is found normally, being perhaps destroyed by the same cells of the mucous membrane, which in that case behave towards it as do all other cellular phagocytes of the vaccinated organism.

9. The serum of animals vaccinated against typhoid infection is endowed with no antitoxic power against the poison produced by the bacillus of Eberth.

10. The toxins of the bacillus of Eberth have a much more serious effect upon the mucous membrane than those of the bacillus of Escherich.

11. The bacilli are not found in the typhoid spots. These are capable of being produced experimentally in the monkey by the injection of the typhoid toxins alone.

DERMATOLOGY.

IN CHARGE OF W. A. HARDAWAY, A.M., M.D.,
Professor of Skin-Diseases in the Missouri Medical College, St. Louis.

ASSISTED BY

C. F. HERSMAN, A.M., M.D.,
St. Louis.

Elephantiasis of the Penis.—Humbert (*The Medical Week*, May 25, 1894) reports the cases of a man who had had two attacks of gonorrhœa, with an interval of three years between them. Shortly after the last there appeared œdema of the prepuce, penis, and scrotum with lymphangitis, and swollen glands which suppurated. Lymphorrhœa was then established with ultimate healing of the sinuses. The œdema never subsided, but, on the other hand, extended. A year ago, without any recurrence of the gonorrhœa, there appeared a plastic arthritis of the left knee and œdema of the leg. When the report was made the elephantiasis involved the penis, groins, scrotum, and legs, the left being most affected. From a small, deep ulcer on the left leg there was an abundant serous exudation, and from the right

thumb there was a similar discharge occurring from the opening left by a boil.

Chlorinated Lime in Pruritus Ani.—Jamieson (*Edinburgh Medical Journal*, June, 1894) states that Berger has had excellent results from the use of liquor calcis chloratæ (B. P.) in pruritus ani. A piece of absorbent cotton is saturated in the solution, and inserted into the anus for the distance of an inch. This is left *in situ* till a slight burning is experienced. The cotton is removed and the anal region washed with the solution. The parts are left undried. Pruritus is said to vanish at once. On its reappearance the procedure must be repeated. Any eczema which may happen to be present will rapidly disappear.

Paget's Disease of the Nose.—At the recent Congress at Rome, Dr. A. Ravogli reported a case of Paget's disease of the nose. The patient was an elderly woman who presented an ulcer which involved the whole nose and the inner canthus of the right eye. The affected surface was made up of nodules, covered with a whitish, macerated epidermis with very scanty secretion. Sections of this growth under the microscope showed nothing characteristic, but scrapings from the surface contained large, double-contoured cells which were thought to be coccidia.

From this case the following conclusions were drawn:

1. Paget's disease is not limited to the breasts of women.
2. The factor in this disease is the presence of certain organisms,—coccidia.
3. It is not an epithelioma, but in time may degenerate into epithelioma.

Raynaud's Disease, with Report of Three Cases.—Morton (*Journal of Cutaneous and Genito-Urinary Diseases*, June, 1894) reports three cases which presented the signs of Raynaud's disease, in which the etiology was probably different in each case. In the first case the disease manifested itself by the two terminal phalanges of the fingers turning white, while the rest of the hand was livid. At first this only occurred in the winter, but after a time the fingers remained in this condition permanently. At times there would be attacks in which the color would become almost black. Eventually the last phalanx of the second finger of the left hand became gangrenous. The author thinks this was a case in which vaso-motor spasm played the important *rôle*.

The second case had suffered for a number of years from interstitial nephritis. In 1892, when recovering from an acute exacerbation of this malady, she began to experience intense pain in the fingers of both hands. For some time before this the fingers had been cold and white, at times turning blue. The fingers of the left hand became livid, and finally there was gangrene of the second and third phalanges. The fingers of the right hand are still white and cold, and at times take on a dark bluish tint. In

this case the author believes that the arterial fibrosis accompanying the kidney-trouble played an important part in shutting off the circulation in the peripheral vessels.

The third case had had syphilis fifteen years before he was seen by the reporter. For some years his fingers and toes had been cold and white, and the hands livid. The nails of the fingers and toes showed marked evidences of impaired nutrition. At times the color of the hands would become darker. The author thought that in this case syphilitic endarteritis might be the factor most important in the circulatory disturbance. Under anti-syphilitic treatment the condition has improved.

MISCELLANEOUS.

Questions used at the First Examination by the Pennsylvania State Medical Board.

The following questions were given the applicants who desired to practise medicine in the State of Pennsylvania, at the recent written examination held in Philadelphia on June 11, 12, 13, and 14. There were two sessions each day, one in the morning at 9 A.M., and the other in the afternoon at 2 P.M.

ANATOMY.—1. What are the anterior and posterior boundaries of the axilla, and what arteries and nerves pass through it? 2. Give the origin and distribution of the third division of the fifth pair of nerves. 3. Bound Scarpa's triangle, and mention the vessels and nerve in it. 4. Name the branches of the abdominal aorta. 5. Give the location and describe the anatomical structure of the kidneys. 6. Describe the mesentery. 7. With what bones does the radius articulate? 8. Name the subdivisions of the alimentary canal, and give the name and location of the various glands found in the small intestines. 9. Give a brief yet comprehensive description of the heart. 10. Give the origin and general distribution of the sympathetic nerve.

PHYSIOLOGY.—1. What do you understand by the term nutrition, and what processes are comprised under it? 2. What is the function of respiration? Describe the process by which it is accomplished. 3. Describe reflex action, and cite an instance. 4. What are the physiological properties of the facial nerve? 5. What is the normal temperature of the human body, and by what processes is it maintained?

PATHOLOGY.—1. Give the characteristic differences between sarcomata and carcinomata. 2. Give the principal varieties of renal changes, ordinarily classified as Bright's disease. 3. What changes take place in the hepatic tissues during acute inflammation of the liver? 4. What pathological changes occur in rachitis? 5. Describe the pathological changes occurring in synovitis.

Diagnosis and Hygiene.—1. Differentiate between gastric cancer and gastric ulcer. 2. Differentiate scarlatina, measles, and roseola. 3. How would you diagnose pneumonia? 4. Differentiate peritonitis and enteritis. 5. Differentiate organic and functional heart murmurs. 6. What are the principal measures which you would employ for the prevention of the spread of infectious diseases? 7. What are the chief sources of contamination to drinking-water? 8. What deleterious gases accumulate in imperfectly-ventilated sleeping-rooms? 9. Through what mediums is the typhoid poison usually communicated? 10. What methods would you suggest for the hygienic care of the skin?

Surgery.—1. Describe the courses of procedure that may be adopted in a case of strangulated hernia. 2. Describe briefly the preparation for an operative procedure in trephining. 3. What symptoms would lead you to suspect fracture at the base of the skull? 4. Name five antiseptic agents that are available in general surgery. 5. Give the diagnosis and surgical treatment of suppurative appendicitis. 6. Give the symptoms and treatment of Pott's fracture at the ankle. 7. How would you diagnose vesical calculus? 8. Describe the operation of amputation of leg at any point of election. 9. Give the diagnosis and treatment for the radical cure of varicocele. 10. Name four anæsthetics and the indications for their use.

Obstetrics.—1. How would you diagnose pregnancy prior to the time of quickening? 2. What is the duration of a natural pregnancy, and within what limits may it vary? At what period does quickening usually occur? 3. What is the most common presentation and which the most frequent position of the presenting part in normal labor? Give the average duration of a natural labor. 4. How would you manage a breech presentation? 5. What course would you pursue if you found an arm presenting? 6. What mechanical treatment would you employ in a case of retained placenta? 7. How would you manage a case of post-partum hemorrhage? 8. In applying forceps which blade should be introduced first? In what direction should traction be made when the fœtal head is in the cavity of the pelvis? 9. How would you diagnose puerperal metritis, and what hygienic methods would you employ in its treatment? What is the best hygienic measure for its prevention? 10. What is the first attention required by the new-born? If found asphyxiated, how would you proceed?

Chemistry.—1. Give the characteristic differences between an acid and an alkali. 2. Describe chlorine; give its physical properties and its chemical action. 3. Give characteristic tests for arsenic, opium, copper, and antimony. 4. What are the most important antidotes for arsenic? 5. What are the most important antidotes for corrosive sublimate? 6. Describe the process for urinary analysis when examining for albumin. 7. Give two reliable tests for diabetic sugar. 8. Describe the phenomena of electrolysis. 9. What means would you employ for the detection of carbonic acid in the air? 10. Give three antidotes for copper.

Therapeutics, Materia Medica, and Practice.—Questions given

by the Pennsylvania State Medical Society, and not used for the homœopathic or eclectic applicants.—1. Describe and treat a case of scarlet fever. 2. Give treatment of a case of acute articular rheumatism complicated with endocarditis. 3. Give symptoms, prognosis, and treatment of a case of cirrhosis of the liver. 4. Describe and treat a case of tetanus. 5. What treatment is indicated in hemorrhage of bowels and perforation of bowels in course of typhoid fever? 6. Give treatment for chronic gastro-intestinal catarrh. 7. Treat a case of opium-poisoning; also give the therapeutic uses of opium. 8. Give the physiological action of digitalis, and state when its use is contra-indicated. 9. Describe the effects of a lethal dose of aconite. 10. Give the physiological action and therapeutic uses of the official preparations and derivatives of hyoscyamus. 11. Give the physiological action and therapeutic uses of nitro-glycerin. 12. Name five (5) emetics and give dose of each. 13. Define narcotics, anæsthetics, and sedatives, and give an example of each. 14. Write a prescription containing oil of sandal-wood and at least one other constituent for chronic cystitis. 15. Name the official preparations of belladonna and dose of those used internally.

On the Healing Art in Italy. (*Edinburgh Medical Journal*, June, 1894.) By Professor Gairdner.

In beginning the summer course of lectures in the University of Glasgow on May 1, 1894, Professor Gairdner said that he desired to make a few remarks suggested by his recent visit to the International Medical Congress at Rome, although he did not propose to speak, except in the most general way, of the Congress itself. Whatever else was apparent, even to the superficial observer, one thing was quite certain,—namely, that in medical matters Italy is striving hard to resume, if possible, the place which for so many ages she occupied in the vanguard of European thought and intellectual progress. In every leading centre men are to be found working upon the most advanced lines of pathological and medical inquiry, familiar many of them with several languages, and possessed of all the most modern ideas, the intercourse especially between Germany and Italy being immensely fruitful of late years. In several instances German or Teutonic professors have found their home and their field of instruction in the old Italian universities, just as Vesalius, of Brussels, did in the sixteenth century,—a fact all the more remarkable when it is remembered that the Latin language has almost ceased to be the common tongue of professors, while the German occupation of North Italy was long one of the greatest political grievances of the Italians, a grievance only ended by the bloody battle-fields of Solferino and Magenta. This great intellectual advance in respect of medicine Professor Gairdner declared to be even more striking to him than the large expenditure which is now being lavished on hospitals and means of teaching (as in the magnificent "Policlinico" of Rome itself) by a country greatly impoverished, as compared with her neighbors, as regards her avail-

able financial resources. And yet, said Dr. Gairdner, Professor Macewen will tell you, if you ask him, that in all matters of hospital and clinical arrangements, present and prospective, Rome, Genoa, and Turin are ahead of us in Glasgow.

Leaving this point, Professor Gairdner said that he could not refrain from insisting on the contrast between his first and his last visit to Italy, in respect of the condition then and now of the science and art of medicine. In 1845–46, a young man fresh from the school of Edinburgh found Italian medicine and surgery whole decades behind the rest of Europe. In the very country of Morgagni, the originator of scientific pathology, there was at that time no pathology worthy of the name; nothing but endless speculations and absolutely inane controversies as to diseases which were, or were supposed to be, hypersthenic, and diseases which were hyposthenic,—a wave of controversy which really originated in the shallow if specious imposture of Brunonianism, which had its birthplace, indeed, in Edinburgh in the latter part of last century, but which very soon disappeared in the land of its birth.

Dr. Gairdner said that in his earlier years in Edinburgh it became part of his duty to read the Italian medical journals which were exchanged with the *Edinburgh Journal*, but that up to and even after the time when Virchow had commenced his splendid career of pathological discovery, so full of the reality of progress because it was so firmly based upon nature and fact, the medical journals of Milan, Turin, and Bologna (which were then considered the most advanced in Italy) were full of these inanities, and hardly ever afforded anything worthy of reproduction in the English language. It is difficult to understand how the country which in 1761 had given birth to the great work of Morgagni could have sunk into such a state of medical decadence as that of Italy in the "fifties." The magnificently enthusiastic reception accorded to Rudolph Virchow in 1894 by the whole Italian nation, and the graceful and appreciative *éloge* pronounced by the great German pathologist on John Baptist Morgagni as the first and greatest of his predecessors in well-ordered pathological research, may be taken as marking in a very striking and almost dramatic way the rejuvenescence of Italy in medical science. That Virchow is the legitimate successor of Morgagni in the present day no one can doubt. It may even be doubted whether in any country of the world there is any intervening name which can be placed in the same rank as these two. Yet the marvellous fact was that, in and about 1850, Italy seemed to have lost touch altogether with the lines of progress initiated by their own greatest pathologist, and the art of healing had sunk into a corresponding position of obscurantism. These things are a lesson for us also, if we should ever be tempted to suppose that by casting away or neglecting the foundations of the medical art we can ever hope to improve it in its more practical as contradistinguished from its scientific aspects.

It was the death of Cavour that sounded the tocsin of this decadence, and aroused the whole medical profession of Italy to the voice of all

Europe, proclaiming, rightly or wrongly, that that great statesman had been slain outright by the bloodlettings performed upon him repeatedly according to an exploded system of practice worthy of a barbarous age. At all events, the new medicine may be said to have had its birth in Italy with the times of her political regeneration. What influence the latter had upon the former Dr. Gairdner did not stop to inquire; but it should not be forgotten that even a distracted and divided Italy had produced in the last century such splendid specimens of medical genius as Redi and Spallanzani, to say nothing of such physicians as Volta and Galvani, and that in the preceding centuries she had not only adopted Vesalius, the greatest of anatomists since Galen, but had shown forth a perfect galaxy of medical names of the highest eminence, extending down to Malpighi in the seventeenth century and Morgagni in the eighteenth, names which place her easily in the forefront of all the nations in Europe up to these dates. We can only hope for her that she will go on prospering and to prosper, and thus recover in the twentieth century all her former lustre.

A Nomenclature for the Different Classes of Infectious Diseases. (*Medical Record*, June 2, 1894.) By W. H. Thomson, M.D., of New York City.

The following classification of infectious diseases was submitted by Dr. Thomson for the consideration of the New York Academy of Medicine, at its meeting held May 3, 1894, with the hope that it would serve to invite discussion on a subject of great public importance,—namely, the adoption by the profession of a definite nomenclature descriptive of the various classes of infectious diseases.

This classification is as follows:

1. All infectious diseases are due to the presence of their specific living micro-organisms in the body.

2. Infectious diseases are divisible into three classes,—(1) the communicable; (2) the non-communicable, and (3) the septic.

3. The communicable diseases are those whose origin is from an animal body. Examples are small-pox, Asiatic cholera, and tuberculosis.

4. The non-communicable infectious diseases are those whose origin is not from an animal body, but from a place or thing. Examples of which are ague, yellow fever, and miasmatic diseases in general.

5. The communicable diseases are divisible into two classes, according to the ordinary modes of their communication,—(1) into the contagious, and (2) into the non-contagious communicable diseases. The contagious communicable diseases are those in which simple proximity to the infected with them is sufficient to communicate the infection to those susceptible to them. Examples of which are typhus fever, scarlet fever, small-pox, measles, diphtheria, mumps, whooping-cough, etc. Isolation of the sick with them, therefore, is needful to prevent infection.

The non-contagious communicable diseases are those in which the com-

munication is not by simple proximity to the sick, but through intermediate means of communication. Isolation of the sick with them, therefore, is neither needful nor effective, in comparison with measures directed against the intermediate means of the infection. Examples of these diseases are typhoid fever, Asiatic cholera, and tuberculosis.

6. The septic infectious diseases are those in which the infection has gained entrance through a wound, or damage, by inflammation or otherwise, of the skin or of a mucous membrane. Examples of these are surgical infection of wounds, erysipelas, hydrophobia, tetanus, etc.

Lastly, all infectious diseases can be prevented by measures of disinfection applicable to each.

FORENSIC MEDICINE.

IN CHARGE OF LORENZO D. BULETTE,
Of the Philadelphia Bar.

LIABILITY OF PATIENT FOR FEES OF CONSULTANT CALLED IN BY THE ATTENDING PHYSICIAN.

A CONSULTING physician or surgeon called in by the attending physician for the purpose of consultation as to the treatment of a case, or the performance of an operation, may recover his fees from the patient. This liability arises not, as it is sometimes contended, from the application of the principles of the law of agency, but from other and distinct legal principles.

If the consultant were called in by the attending physician as the special agent of the patient for that purpose, he would be bound to inquire into the scope and extent of the agency; for, if the agent is without authority, his principal, the patient, is discharged from liability. But where the consulting physician is simply called in by the attending physician without anything being said about fees, his right to recover for his professional services from the patient is based upon the principle that where a person knowingly and without objection permits another to render service for him of any kind whatsoever, the law implies a promise to pay what such service is reasonably worth. Previous authorization is indeed unnecessary; for if such consultant were called by one having no pretext or authority whatever for doing so, and the patient without objection receives the benefit of such services, the law will imply a contract to pay for them, inasmuch as a request is presumed if the patient permits the services to proceed. This is the law as it was laid down in Shelton *vs.* Johnson.[1]

[1] 40 Iowa, 84 (1874).

In this case the patient was sued by Doctor B., the consulting physician, for his fees. The answer of the patient, the defendant, alleges that Doctor A., the attending physician, had been much criticised for his treatment of the defendant and his family, in which two deaths had occurred during his attendance upon them; that Doctor A. proposed the calling in of the consulting physician at his own expense for the purpose of showing that his practice was proper and not subject to such criticism; that the services of the plaintiff were rendered, not as the employé of the defendant, but under and by virtue of this license or permission to Doctor A. to call in the plaintiff for his own benefit; that while the defendant does not affirm that the plaintiff knew of this agreement between Doctor A. and himself, yet, for the purpose of this answer, he believes that the plaintiff understood that he was rendering the services at Doctor A.'s expense and not with a view of charging him, the defendant.

On this state of facts, judgment for the amount of his claim was entered for the plaintiff; and the Supreme Court, in affirming this judgment, passed upon the legal effect of the facts and agreement of the foregoing answer as follows:

"The understanding between the defendant and his attending physician introduced into the transaction an element unusual and exceptional,—viz., that the consultation should be for the benefit, not of the invalid, but of the physician. And, as a consequence of this agreement, the promise, which the law implies, is shifted from the defendant to his physician. Now, as the effect of this agreement is to produce results unusual in their nature, the plaintiff ought not, in justice, to be bound by it, unless he had a knowledge of it.

"The answer admits that Doctor A. called on Doctor B. to go as consulting physician to the defendant's, and told him that defendant had authorized him to bring plaintiff, and that while plaintiff was rendering the services he did not know that the defendant was not liable to pay him.

"The plaintiff, then," continues the court, "had a right to suppose that the service which he was called upon to render was to be rendered in the usual manner, for the benefit of the defendant and his family, and that the usual implication of law would arise,—namely, a promise upon the part of the party for whose benefit the service was rendered to pay for it. If the defendant did not intend that the service should be rendered in the usual way, and should be attended with the usual presumptions, it was his duty to inform plaintiff of the circumstances which made the transaction exceptional in its nature."

As to the claim of the defendant that the services of the plaintiff were rendered for the benefit of Doctor A., the attending physician, the Supreme Court said: "The specific facts admitted and alleged in the answer show that, as between defendant and plaintiff, as matter of law, the service was rendered for defendant; or, in other words, that the conduct of the defendant estops him to deny that the service was rendered for him. Taken in

connection with the whole answer, the allegation that what Doctor B. did was done for the benefit of the attending physician is the statement of a legal conclusion rather than the averment of a distinct fact. As a fact it is not admitted by the plaintiff, and as a conclusion of law it is erroneous."

The Supreme Court of Wisconsin, following the law as above, said:[1]

"The rule above laid down is peculiarly applicable to the services rendered by a physician. It is quite exceptional for the members of that profession to undertake the treatment of their patients on special contracts by which they are to be paid a sum in gross, and by which they bind themselves personally with their patients to pay for any needed assistance in the proper treatment of the case; and when such a case does occur in the profession, it is, as said by the learned court in the case above cited, an unusual and exceptional case, and one of which another physician called in consultation or otherwise is not bound to inform himself before rendering the required service. If the exceptional contract is to bind the consulting or assisting physician, it must be brought to his knowledge before his services are accepted by the patient; otherwise it can have no weight in determining the liability of the patient for the service performed by such physician."

BOOK REVIEWS.

PAIN: IN ITS NEURO-PATHOLOGICAL, DIAGNOSTIC, MEDICO-LEGAL, AND NEURO-THERAPEUTIC RELATIONS. By I. Leonard Corning, A.M., M.D., Consultant in Nervous Diseases to St. Frances's Hospital, St. Mary's Hospital, the Hackensack Hospital; Fellow of the New York Academy of Medicine, and Member of New York Neurological Society, Medical Society, County of New York, and Medical Society, State of New York. Author of "A Treatise on Headache and Neuralgia," "Brain Exhaustion," "Local Anæsthesia," "Hysteria and Epilepsy," "Brain Rest," etc. Illustrated. Philadelphia: J. B. Lippincott Company, 1894.

No novice writes this book, but a student who has spent many years over the problem of the relief of pain, who has discarded as mere makeshifts and adjuvants the "poppy" and "mandragora," "and all the drowsy syrups of the world," and searches beyond and within to find some new and certain way to relieve humanity of its primeval curse. The antiquated mind may recoil from much that he writes; may question the value of maintaining limited anæsthesia by cocaine surrounded with a ring of chilled cocoa butter in the tissues. It may question whether the wood-cuts actually depict the real condition of the youth who seems so happy in the air cabinet with his newspaper by his side and a decanter and glasses which bespeak even conviviality (Fig. 20), or may even regard with suspicion the serenity of Fig. 21 in similar surroundings; but we must remember that there is here an attempt to succeed where known measures fail, and be less censorious. The author treads in the footsteps of his predecessors, but when they grow faint and fail, he boldly presses on and seeks new

[1] Garrey *vs.* Stadler, 67 Wis. 512 (1886).

fields. Dr. Corning seems as one whose spirit frets at the immutable bounds set by Nature to the science of therapeutics, and would fain burst them and soar beyond. He strives, whether vainly or not let his pages tell, to perform the new, the untried, the unheard-of—in fact, to add to alimentation, hygiene, and medication a power from mechanical sources, to materialize, to chirurgeonize therapeutics; to put his remedy mechanically where absorption and circulation will not take it, to keep it there when those agencies will none of it. His genius will not be bound if force can unbind it. Before this the author has exhibited the same tendencies. He has invented and published years ago his "Carotid Compressor" as a sleep-producer, and his system of retaining anæsthetics in the tissues by local constriction and compression. Now he irrigates the cauda equina, tries direct spinal medication, and gives his drugs at high pressure in the pneumatic cabinet.

To a certain extent this is but a drift of the times which we all follow. Is there any limit beyond our own conventional ones? Is Dr. Corning wiser or less wise than the rest of us? The emetic which fails to act is helped by mechanical stimulation of the pharynx. The antidote that will not rouse is assisted by blows and the battery. The purgative that fails to purge is ignominiously reinforced by the true *vis a tergo* of an enema. The tissue that aches is dosed with morphine locally; we stretch nerves and excise them; we trephine our way into the most guarded retreats; is there any valid reason save a sentimental one why we should not irrigate the cauda equina as freely as we irrigate the colon? In fact, may not the mechanical impact with its rude violence as a psychical assistant be the true remedial agent ofttimes, and the syringe, hypodermic and fountain, the true fountain of youth and longevity sought in vain by De Soto in the Western wilds, while the pharmacy of to-day will furnish them by the gross?

The drug and its reign may be doomed to extinction, for the growing tendency of the age is best shown in that advanced school which becomes more surgical daily, which searches always for causes which are removable by the knife, which would, from its present stand-point, classify all diseases into great groups, like eye-diseases and reflexes which the oculist takes charge of; diseases of brain and spine, and their consequences, which the trephine and knife will reach; of the throat, nose, larynx, and soon of the lungs, which the surgeon will successfully deal with, or the biologist will perchance assist him in with his needle; of diseases of the stomach and bowels, which can be dealt with properly and intelligently only by incision and excision, extraction and scraping and stretching, with removal of the appendix as a routine practice; besides which, why need we enumerate the bladder and urethra, and the sexual difficulties which the surgeon has already made his own? In short, everything removable is being removed, and everything scrapable is being scraped.

Alas! poor drugs, even when we demand them, we hardly recognize them. Brown-Séquard is dead, but his theory is still nourished and flourishes on testicular and other juices, while tuberculin is but under a cloud, as we all feel, and only brooding we hope for more promising children.

Even now we see but in part. The field may yield much more surprising fruit. Dr. Corning has but tickled it with a straw, and the cauda equina laughs. I think of asthma with its bronchial spasm, hundreds of tubes of diminished lumen, like so many strictured urethræ waiting for divulsion. It is true that the world squirms sometimes at the wholesale removal of organs. It looks like defeat in cure to destroy the offender, and for our comfort surgery demands some aid from therapeutics yet. We cannot yet look with equanimity on losing the brain, our brain, because it is visionary, or our lungs because we cough, or our feet because we have corns; pulling out aching organs like aching teeth excites remonstrance. Even our author has faith still in rest and dietetics, and "cerebral rest" is the exact kind that he believes in, that he uses as a true scientific remedy, and for it he claims remarkable results. In fact, it is a new system of cure that he discloses to us.

Beginning with one hour a day he increases daily the period of rest hour by hour, from one to eight, to ten, to eighteen, to twenty-one hours in the twenty-four. And this result is brought about by the systematic exclusion of light and sound, by hydrotherapy, moderate medication, and appropriate food, food which will exert "a demonstrably soporific effect;" rest and seclusion we know and slight medication we can imagine, but what is this "somnolent food"?—for the days of the lotus-eaters are over and exist only in poetry. Dr. Corning mentions but two articles—hops and lettuce—which he tells us are both vegetables. Lettuce is, we grant, but hops may be chemical, for we take it generally by faith in beer.

Lettuce he combines in many ways described as "salads," etc., and evidently intends this subtle herb to be worked into pretty much everything eatable. This subject gives us anxiety, for he tells us "that one cannot hope to cope with the ordinary problems of insomnia" without first mastering this aspect of the subject; we have struggled in vain with lettuce, and the clue must lie in hops: to thoroughly cope with insomnia we must drink more beer, and then perhaps the secret may reveal itself.

Medication is resorted to as little as possible, but Dr. Corning has used absinthe "to allay worry and depression," and how strange it seems that the public, the young and thoughtless ones especially, should have discovered this use of absinthe long ago, and wanting true scientific guidance should so often have perished. What happy results we may get with darkness and hops, silence and lettuce and absinthe are only hinted at where we read, "but when the patient awakes, which may occur not at all, or two or three times during the hours set apart for rest," for evidently cases occur in which cerebral rest, previously prolonged to twenty-one in the twenty-four hours, has achieved the still more remarkable success of overleaping time, and passed on into eternity. How this can be done is again hinted at when we find that the patient on awakening is to be regaled at once with somnolent food; at least in the sleep that knows no waking he is free from that.

On the proposition, "The less the exhaustion of the brain-cells the greater will be the power of all sensory impressions to cause wakefulness," he draws the remarkable deduction, "Therefore the occurrence of such impression in persons who exhibit but slight predisposition to unconsciousness must be detrimental, if not fatal, to sleep;" while if we state it plainly it seems so different, for if those are most easily roused who are least tired, then in those who are least tired such impressions will most easily rouse them, and those persons have less brain exhaustion than others, and are better able to bear loss of sleep, *ergo*, those who are most wakeful have least need of sleep.

But in soberness we think Dr. Corning has done a great and needed work. He has carried surgical therapeutics so far that it will not be necessary for any one to follow in his footsteps. It will be long, we trust, ere the body of scientific workers attain his giddy eminence. He has so minutely described the method and instrumental aids to spinal medication that all who read can perform or avoid the operation with a thorough understanding. Its dangers he makes light of. The risk of pricking the filaments of the cauda is, the author thinks, but slight, for the needle is "a fine instrument;" but "wounds with an awl or other coarse instrument may set up neuritis." This valuable observation is probably from clinical experience, and seems "awl" sufficient.

E. W. W.

A Manual of Practical Obstetrics. By Edward P. Davis, A.M., M.D., Professor of Obstetrics and Diseases of Infancy in the Philadelphia Polyclinic, etc. Second Edition, 8vo., pp. 351. Philadelphia: P. Blakiston, Son & Co., 1894.

A study of this very readable manual leaves us with one main regret: that the author did not give us instead a complete treatise on the subject, the faults of the present work being nearly all attributable to too great brevity.

It is a very clear and concise statement of the matter in hand, brought, with the valuable chapter on symphyseotomy and other changes in this edition, well up to date, and to the busy practitioner, who already knows the subject, but needs something *short* and to the *point* to renew his memory, it must prove a valuable aid.

A noticeable feature is the large number of practical suggestions too often omitted even from much larger works.

Of the individual chapters, those on normal labor, post-partum hemorrhage, and puerperal sepsis deserve special mention; in the latter, however, one is surprised to read, "The germs of gonorrhœa, syphilis, or cancer may be present in the body before pregnancy; and, finding access directly to the circulation through the wounds of labor, may produce sepsis" to explain cases of so-called autogenetic infection. This is indeed giving too little space to such important beings as the *germs* of syphilis and cancer, if such have really been demonstrated. Other chapters leave more to be desired, notably that on the diagnosis of pregnancy, where mention is not even made of such signs as intermittent uterine contractions and ballottement, and other important signs are passed over with so few words that it is not without some difficulty that they are recognized.

The illustrations are unusually good and well chosen, and the entire execution of the work does credit to the well-known house which issues it. On the whole, it is a very successful attempt to condense much valuable information into a small volume, and the work is fully entitled to an increase of the favor already granted to the first edition. F. A. P.

THE NURSE'S DICTIONARY OF MEDICAL TERMS AND NURSING TREATMENT, compiled for the use of nurses and containing descriptions of the principal medical and nursing terms and abbreviations, instruments, drugs, diseases, accidents, treatments, physiological names, operations, foods, appliances, etc., etc., encountered in the ward or sick-room. By Honnor Morten, author of "Sketches of Hospital Life," "How to become a Nurse," etc. Philadelphia: W. B. Saunders, 925 Walnut Street; London: The Scientific Press, Limited, 428 Strand, W. C. (All rights reserved.) Price, $1.00. Second Edition.

We merely mention this book in order to condemn it. The definitions, in part or whole, of a few words will suffice to support this opinion, making further remarks hardly necessary.

"Hare's specific, patent alleviator of asthma, should be used only under medical direction. Same applies to Himrod's cure and others."

Hiccough is defined as "a grave symptom when occurring in a serious case of illness."

Morphine: "Injected under the skin it causes a sensation of peace to settle over the frame." Under Erysipelas the nurse is told that "the hands must be dipped in carbolic each time after attending to the patient." After defining Grafting it is said "that the new skin is snipped from some healthy person (often the nurse has to offer her arm)." Salpingitis is said to be an "inflammation of a tube, particularly of the Eustachian tube. Generally due to gonorrhœa," and so on *ad libitum*, *ad nauseam*.

In the preface "the compiler desires to heartily thank those who sent in corrections of the first edition." And this is the second "corrected" edition!

H. W. C.

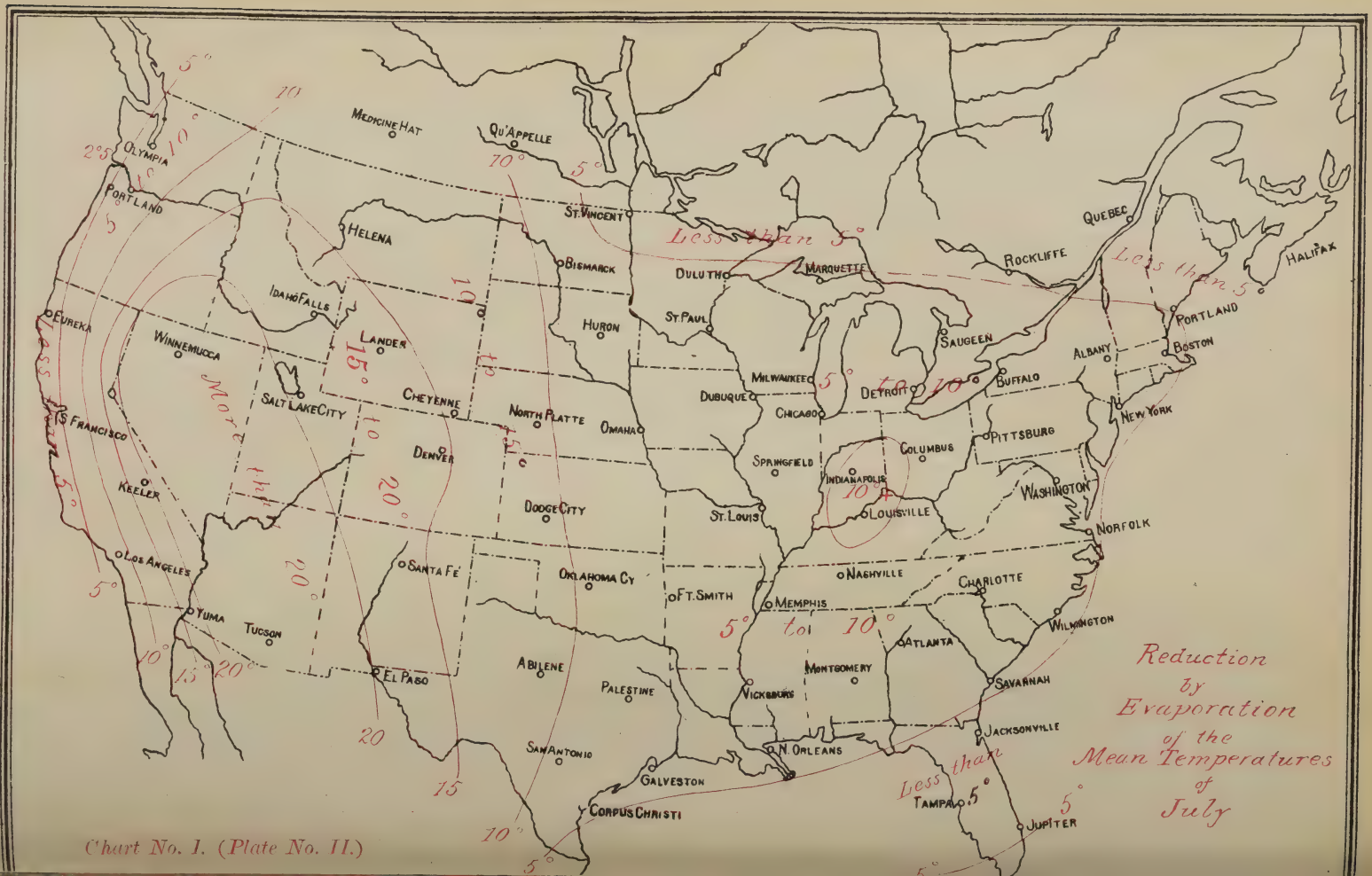


Chart No. I. (Plate No. II.)

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ORIGINAL COMMUNICATIONS.

SENSIBLE TEMPERATURES.[1]

BY MARK W. HARRINGTON, ESQ.,
Chief of the Weather Bureau, U. S. Department of Agriculture, Washington, D. C.

By "sensible" temperature is meant that which is felt at the surface of the skin, especially where the skin is exposed, as on the face and hands. This may be a very different temperature from that of direct insolation or from that of shade,—the two temperatures most discussed by meteorologists. On sensible temperatures depends our sense of comfort in hot weather. They are therefore of importance to every one, but of especial importance to invalids and to their medical advisers.

The sensible temperatures depend on evaporation, and when evaporation takes place they are invariably lower than the shade-temperatures given in meteorologic tables.

To change a definite quantity of water from the liquid to the vapor state requires the utilization of a definite quantity of that form of energy which we call heat. On evaporation this heat changes to other forms of energy; it is no longer sensible, and a feeling of coolness results from its change. Thus is caused a reduction of temperature at the spot where the evaporation takes place, and as long as evaporation continues the surface from which it takes place is cooler than the general air-temperature. In actual practice the temperature of evaporation is taken by means of a wet-bulb thermometer,—a thermometer the bulb of which is always kept moist and consequently has evaporation constantly taking place on its surface. The thermometer used for this purpose is kept in the shade in a box which

[1] Read before the American Climatological Association, June 1, 1894.

permits free ventilation while it protects it from direct currents of air. In this paper, when not otherwise stated, by temperature of evaporation is meant that obtained by such a thermometer thus protected,—that is, in the shade and protected from the wind.

The reduction of temperature caused by evaporation depends on the rapidity with which evaporation takes place, and this in turn on the amount of moisture already in the air. In general when the air is saturated with moisture (in other words, when the shade-temperature and the dew-point are the same) there is no evaporation, and the reduction is zero. When the air is supersaturated—that is, when the shade-temperature is lower than the dew-point—then condensation, the reverse of evaporation, takes place; heat is released, and, instead of a reduction, we have an addition to the temperature. But when the air is not saturated the shade-temperature is above the dew-point, and a reduction of temperature takes place, the amount of this reduction depending on the depression of the dew-point below the shade-temperature. The greater the depression of the dew-point, the less the relative humidity, the drier the air, the more rapid the evaporation, and the greater the reduction of temperature caused by evaporation. The relations between shade-temperature, the dew-point, and reduction of temperature are expressed by a simple empirical equation and are given in meteorologic tables. To show them graphically and give an idea of their general character, the accompanying diagram (Plate I.) has been constructed. The shade-temperatures are arranged vertically from 32° to 103°, reading downward. The dew-points are arranged horizontally from 32° to 80° and read from left to right. Through the points where these temperatures are the same is drawn a line (here a diagonal straight line) along which the reduction is zero,—that is, the sensible temperatures and shade-temperatures are here alike. Throughout the space above this line the shade-temperatures are below the dew-point; here condensation would occur and the temperatures would be raised,—shade and sensible equally. Below the zero line the shade-temperatures are higher than the dew-points, and a reduction of temperature will occur on a surface where evaporation is taking place. If it takes place freely, the reductions will have various values,—indicated by the lines drawn for each 5° of reduction. These lines are not quite straight, and they diverge towards the left. This means that with the same temperature a change in a low dew-point causes a greater change in the reduction than the same change in the dew-point when the latter is high. The chart can be used for intermediate values and can be read to the tenth of a degree in the reductions.

The amount of this reduction, or the lowering of the shade-temperature, will be greatest where the air is driest, least where the air is most moist. In Washington, Philadelphia, or San Francisco, where the moisture is usually abundant, the dew-point is generally not far below the shade-temperature, evaporation is relatively small, and hot weather *feels* hot. On the other hand, at Denver, Santa Fé, or Prescott, where the moisture is usually

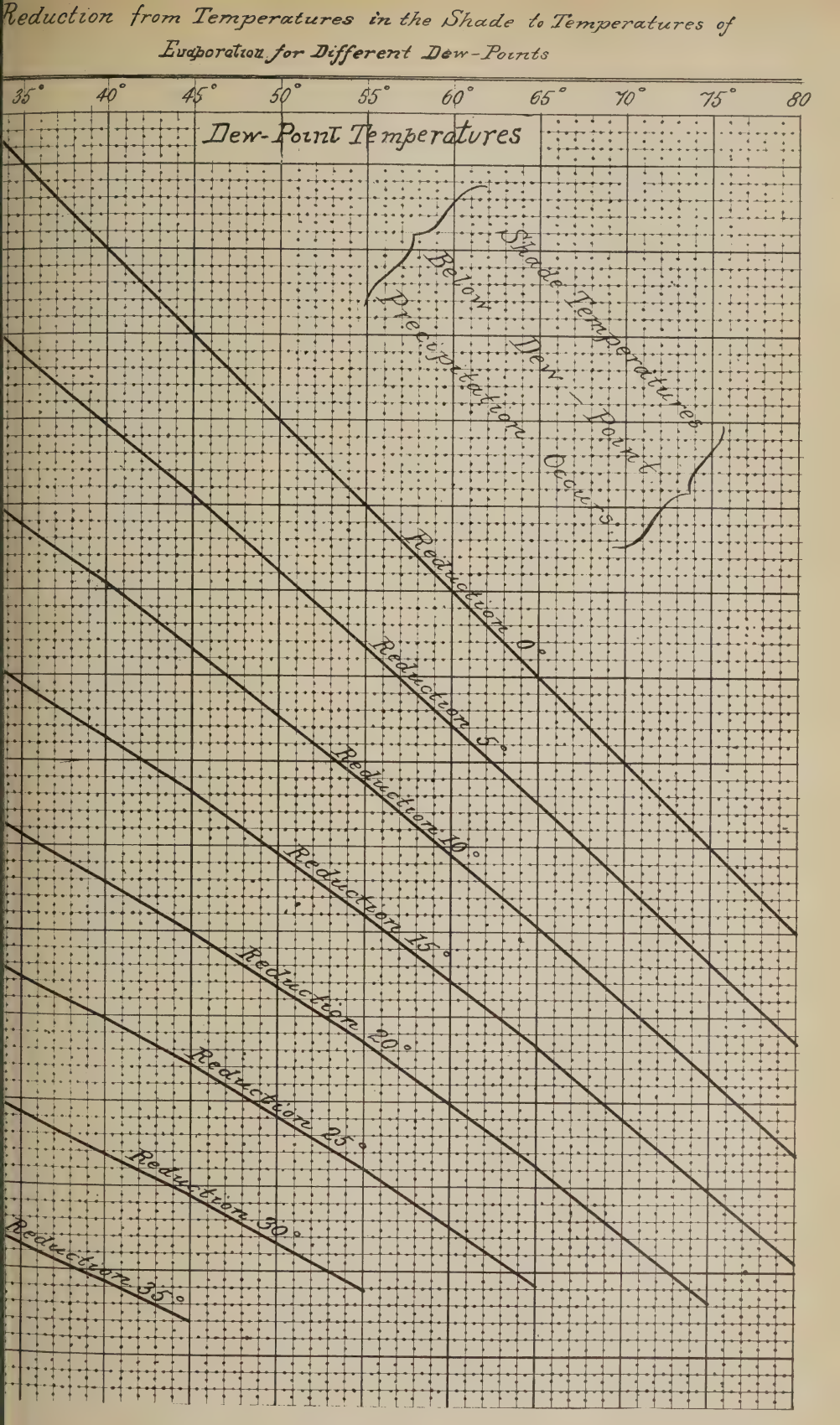

Reduction from Temperatures in the Shade to Temperatures of Evaporation for Different Dew-Points
35°
40°
45°
50°
55°
60°
65°
70°
75°
80
Dew-Point Temperatures
Below Precipitation Dew-Point
Shade Temperatures
Reduction 0°
Reduction 5°
Reduction 10°
Reduction 15°
Reduction 20°
Reduction 25°
Reduction 30°
Reduction 35°

Plate No. I.

scanty, the dew-point is much lower than the shade-temperature, especially in hot weather, and the reduction is great,—the greater the higher the temperature. The most extreme case easily accessible is that of Furnace Creek, Death Valley, California. During the observations taken there by the Weather Bureau in the summer of 1891, the maximum temperatures usually passed beyond the limits of Diagram I. and have been computed independently. On five days the maximum temperature reached 122° (June 30 to July 2, and August 24 and 25), but at these times the dew-point ran from 44° to 55° and the temperatures of evaporation from 74° to 77°. The temperature felt by a person favorably situated was from 45° to 48° lower than that shown by the thermometer in the shade, and was almost cool for a summer afternoon. Again, on August 4 and 5, the dew-point sank to below freezing (30° and 27° respectively) while the maxima were 118° and 114°. In these cases the reduction was 48° and 47° and the temperatures of free evaporation 70° and 67°,—or positively cool for summer.

It appears that in arid regions the reduction may make hot weather not only endurable but even agreeable and refreshing. What happens in arid or semi-arid regions periodically may happen in other regions with a centre of high pressure—which in summer is hot and dry—or with a more enduring drouth such as may occur at any season.

The observations available do not permit of a comparison hour by hour of the reduction of temperature by evaporation, because no hourly observations involving moisture are taken by the Weather Bureau. Very simple considerations, however, will show that the reduction is greatest in the hottest part of the day and least in the coldest. Similarly the reduction is greatest in the hottest part of the year and least in the coldest.

To get some idea of the distribution of such temperatures over the United States I have selected the hottest month (July) and have used the normal temperatures and dew-points. The results are given in Charts I. and II.

Chart I. gives the reduction of mean temperatures over the United States, due to evaporation, obtained by this procedure. It appears that this reduction varies from 3.5° at Eastport, Maine, to over 20° in the southwest. From the latter region the reduction decreases towards the east, north, and west. It is 10° to 20° over the plains and Rocky Mountains, from 5° to 10° over the Eastern States and the region about the 100th meridian, and less than 5° in the vicinity of Lake Superior and Northeastern New England. It decreases very rapidly from the arid region westward, until along the Pacific Coast, from the vicinity of Puget Sound to that of Los Angeles, it is less than 5°. It appears, therefore, from this chart (No. 1) that the beneficial effects of this reduction are most felt in that part of the country where they are most needed, and in this we have the explanation of the fact that the extremely high temperatures which are experienced in midsummer in the arid region are not particularly unpleasant to bear. I

may say as a matter of personal experience that I have frequently suffered more from heat on the Atlantic seaboard, where the temperature did not reach 100°, than I have in the arid and semi-arid region of the West, where the extreme heat of the day may reach as high as 110° or 115°. The reason of this is to be found in the greater moisture found along the Atlantic seaboard, and the consequent less reduction from shade-temperatures to sensible temperatures. This reduction in the far West is very great; on the Atlantic seaboard it is quite small.

Chart No. II. shows the resulting sensible temperatures. It is an instructive chart, and clearly shows that the temperatures which one actually feels in the dry West and Southwest are decidedly lower than the corresponding temperatures in the Eastern States. For instance, it is a fact which appears easily on this map that the sensible temperatures at El Paso, in extreme Western Texas, are nearly identical with those at Erie, in Pennsylvania, on Lake Erie. Indeed, the sensible temperatures at El Paso in July are decidedly lower than the sensible temperatures over Iowa. The sensible temperatures over Southern New Mexico and Southern Arizona are very closely those of Pennsylvania and Southern New York and Massachusetts during the hottest season of the year. The region where we have the highest sensible temperatures in July is along the Gulf of Mexico and the Southern Atlantic Coast. Here we are likely to have an uncomfortable and oppressive feeling of heat, especially on days when the air is very moist. The region where the sensible temperature is least in the United States is west of the Continental Divide for the most part, and north of Arizona and New Mexico. It covers the States of Nevada, Idaho, Montana, a large part of Wyoming and Colorado, and the Territory of Utah, and reaches the Pacific Coast in Northern California about Cape Mendocino. There is a small island of higher sensible temperatures about Great Salt Lake, the cause of which is obvious.

So far it has been only a question of temperatures in the shade. Temperatures in the sun are always higher and may be very much higher. On a hot summer afternoon a temperature of 130° in the direct sun's rays is not rare in any latitude of the United States. Sometimes this temperature reaches 140°, and occasionally it is even higher than this. The conditions for sensible temperatures already stated do not apply in such cases,—in part, it may be, because of the failure of sufficient perspiration to give free evaporation, in part because of the especial effects which strong and direct insolation has upon organic structures.

To obtain the beneficial effects of the reduction of temperature by evaporation the shade must be sought and the direct sun's rays avoided. The effects may be heightened by a natural or artificial breeze or wind, and for parts of the body covered by clothing they may be obtained by adapting the clothing to the free passage of air and moisture. For hot weather and in the shade the color of the clothing is of less consequence than its texture, together with sufficient looseness to permit of the free access of air. The

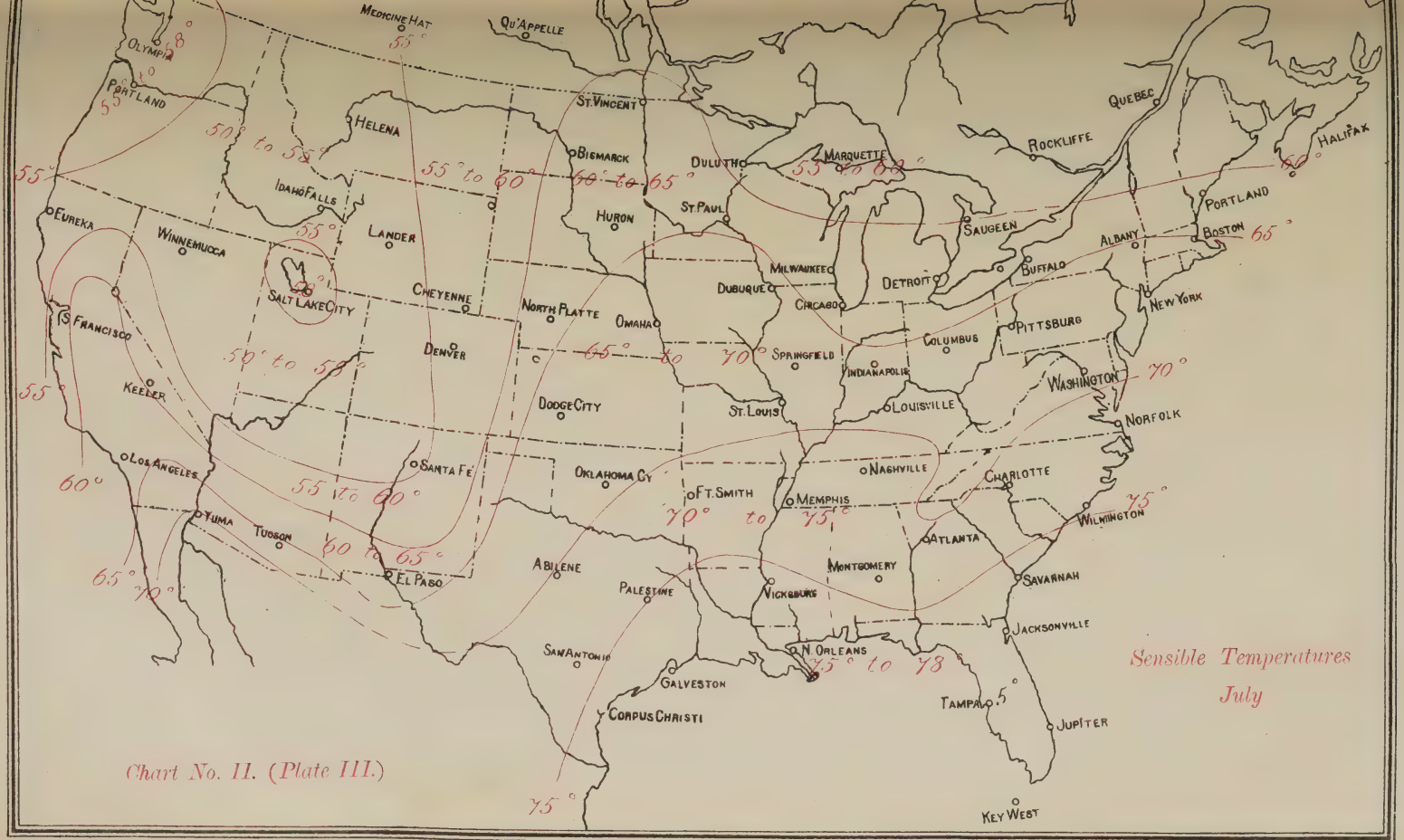


Chart No. II. (Plate III.)

reduction of temperature by evaporation may be increased by many devices for making an artificial breeze (as the fan or the punka) and by offering more water for evaporation, as by a fountain or the dripping screens used in some parts of India.

ALIMENTATION IN PULMONARY DISEASE.[1]

BY ANDREW H. SMITH, M.D.,

Physician to the Presbyterian Hospital; Professor of Clinical Medicine at the New York Post-Graduate Medical School, New York City.

ALIMENTATION plays a most important part in the management of disease in general, but in pulmonary affections the problem is complicated by special conditions growing out of the functions of the affected organs.

We are apt to regard nutrition too much as if it were only another term for digestion, and practically to assume that if the food taken into the stomach goes through the proper changes in the alimentary canal, and the nutritive portion is properly taken into the blood, this is all with which we need have any concern. But the truth is that all may go on perfectly well up to this point, and yet most serious defects in the nutritive process still be in store for the patient.

The products of digestion when received into the circulation are not blood. They represent neither serum nor corpuscles; they are in fact dead matter, requiring to be vitalized by the process of assimilation before they become a part of the living blood. Of the manner in which this change takes place we know almost nothing. We even do not know in what organ or organs the corpuscles are formed. But we do know that an essential factor is the process of oxygenation that takes place in the lungs. This fact, which is amply attested by physiological observations, may be readily illustrated by any one in his own person. We all know how a few moments in the open air will increase the appetite for the morning meal, although the condition of the stomach is the same as it would have been if we had remained in the close atmosphere of the sleeping-room. In both cases the stomach is empty, but in one case the fresh air has thoroughly oxygenated the nutritive material in the blood derived from the meal of the previous evening, and in the other case a part of that material is circulating still in an unassimilated condition, and dulling the appetite as effectually as if it had remained in the stomach. For the desire for food is less an expression of an empty stomach than of the absence of unassimilated material from the blood. It is not the completion of digestion so much as the completion of assimilation that is the signal for more food.

It is the fact that the lungs are the seat of this essential part of the

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[1] President's Address delivered at the meeting of the American Climatological Association at Washington, D. C., May 29, 1894.

assimilative process that gives to pulmonary affections a peculiar relation to alimentation. For any considerable impairment of the action of the lungs cannot fail to impair at the same time the normal rate at which the crude products of digestion are converted into living, active, life-sustaining blood. Material which has not undergone this change is for the time being not only useless to the economy, but a hinderance to proper metabolism. We see this illustrated in the hebetude and languor resulting from an insufficient supply of fresh air during digestion, and the prompt disappearance of these symptoms when the blood is properly aerated.

If, then, a considerable obstruction exists to the entrance of air into the lungs, it follows that an addition of more nutritive material to the blood than can be duly acted upon under the circumstances of crippled respiration, will only add to the circulatory embarrassment, and aggravate the condition of the patient.

Under these conditions, therefore, we should study in acute cases to give as little nourishment as will sustain the vital powers rather than as much as the stomach can be made to digest. It is here that I believe a serious error is being constantly committed. In pneumonia, for example, the reaction from the excessive spoliation formerly in vogue, coinciding with an acute appreciation of the great nervous and muscular depression present in some cases, has led to an unreasoning effort to combat the disease by forcing food into the stomach. It is not long since the average hospital interne seemed to consider that his faithfulness to duty in a case of pneumonia was measured by the number of ounces of milk and beef-tea the unhappy patient could be made to swallow. To-day this idea is less prevalent, but it still has not entirely lost its force. We need constantly to remember that the extreme prostration so often seen in pneumonia is the result of a toxic infection of nerve and muscle, and that this toxæmia can no more be combated successfully by excessive feeding than if it were caused by the poison of a cobra or a rattlesnake. Efforts to "keep up the strength" by this means will result only in imposing a fresh burden upon the eliminating organs in getting rid of unassimilated material.

If we turn from this type of pneumonia to that in which the peril lies in the excessive strain upon the right heart due to impediment in the pulmonary circulation, we shall find that here, too, only harm can result from crowding the vessels with more pabulum than can be acted upon in the gorged and paretic pulmonary circulation. The venous blood is dammed back in the lungs, and the right heart is forced to keep up a twofold struggle between the obstruction in front and the pressure from behind. It is in an evil case at best, but its plight may be made worse by adding to the mass it is required to move a quantity of material which cannot be made available for any useful purpose so long as the oxygenating function of the lungs remains in its crippled condition.

But not less important than the quantity is the nature of the food. As the ultimate destiny of nutriment is to become tissue, that should be selected

which requires least change to convert it into tissue. All forms of food are derived originally from the vegetable kingdom, but a large share of the work of converting vegetable material into our tissues may be done for us by the lower animals. It is well to avail ourselves of this assistance when for any reason the conversion within our own economy is deficient or delayed. Flesh food is usually more readily digested than the carbo-hydrates, and the resulting peptones when taken into the blood are much more nearly allied to the tissues than are the sugar and other products that result from the digestion of vegetable substances. We shall therefore favor the chances of complete hæmatosis if we select nitrogenous food. For the sake of greater ease of digestion it is better to give the nourishment in liquid form, and if given in small quantities, at short intervals, we shall avoid undue repletion both of the stomach and the vessels.

When the patient is fully conscious, his sensations can be trusted as a guide to the amount of nutriment required, and food should never be forced upon him when his instinct rebels against it. Plain water, however, should be freely offered, and will often be gratefully accepted when liquid *food* would be refused, the instinctive feeling of the patient discriminating at once between what will keep the blood fluid and facilitate its circulation and what would act as a burden and a clog.

If now we pass to chronic affections of the lungs, the same principle will hold good with certain important modifications in practice. We have here a chronic condition in which we are confronted with a restricted hæmatosis on the one hand and urgent necessity for a high degree of nutrition on the other. The difficulty of reconciling these two conditions will be in proportion to the degree of lung insufficiency. How familiar is the picture of the flattened and motionless chest of advanced fibroid phthisis, with the accompanying complete anorexia, and the consequent bloodless face and white conjunctivæ. There is no appetite,—not because of any faulty condition of the digestive organs, but because nutritive material taken into the blood continues to circulate in its crude and unassimilated form for lack of proper oxygenation, and its presence in this form excites a constant protest against a further ingestion of food.

In the minor degrees of chronic lung insufficiency the respiratory movements make up in frequency what they lack in amplitude. So long as this compensation can be fully maintained, there may be no considerable defect in hæmatosis, and, in the absence of fever, no marked failure of nutrition. But sooner or later a time comes when the respiration is so far impaired that enough oxygen cannot be taken into the blood to act upon such an amount of nutritive material as is necessary for the full maintenance of the economy. The moment this stage is reached, the appetite fails in proportion to the defect of hæmatosis. This is in accordance with the conservatism of nature, and we should heed the warning. Unless we can improve the hæmatosis, and with it the whole process of metabolism, we shall only do harm by high feeding. Digestion in these cases fails as well as assimi-

lation, for the digestive fluids will be inefficient in proportion as the blood is poor from imperfect hæmatosis. What can we expect from the peptic glands when they are supplied with a blood containing no more than half the usual number of corpuscles and only twenty or thirty per cent. of hæmoglobin? Moreover, in these chronic cases with pronounced anæmia and emaciation, we cannot rely chiefly upon nitrogenous food, as we must do in acute affections of the lungs. The heat-producing carbo-hydrates and fats are required in addition and these are more difficult of assimilation. Hence a vicious circle is established, the defective hæmatosis aggravating the dyspepsia, and this in turn resulting in greater poverty of the blood.

Under these conditions life in the open air is of the utmost importance. Every atom of oxygen taken into the blood means a corresponding amount of assimilated pabulum for the tissues and better blood out of which to elaborate the digestive ferments.

I have obtained much benefit in cases of this kind from rectal injections of defibrinated blood. This material seems to be absorbed almost unchanged, the corpuscles as well as the serum, it being a frequent experience that no trace of blood is found in the next dejection. There being no digestive action upon the blood, its absorption into the venous circulation is almost equivalent to transfusion very slowly performed; and but little change in the way of hæmatosis is required to fit the added material for the immediate use of the tissues. This practice frequently results in a prompt improvement of the digestion, the gastric and intestinal glands being furnished with a richer blood, and yielding consequently a more efficient product.

The benefit is sometimes very striking. I recall a case treated at the Presbyterian Hospital some years ago, in which the patient was so far gone with phthisis that I was surprised each day when I came into the ward and found his bed still occupied. There was an enormous cavity at the summit of the right lung; the patient was emaciated to the last degree, weighing only one hundred and one pounds the last time he had been able to stand on his feet to be weighed. He was extremely anæmic and took almost no food. He had been in the hospital since the 18th of August, and had gone down steadily in spite of all the usual restorative treatment. On November 5 the treatment with blood enemata was begun, four ounces being given each night at bedtime. After a few days the dose was reduced to two ounces. In two weeks he gained seven pounds. His appetite returned, and his digestion improved. He gained strength rapidly, and at the end of three months left the hospital at his own request, having gained thirty-three pounds, and considering himself well. The cavity in his lung had contracted greatly, and expectoration had nearly ceased.

Other cases less striking than this, but still very remarkable, were reported to the Therapeutical Society in 1879, and published with the proceedings of the Society in vol. xxix. of the *New York Medical Journal.*

Though I prefer defibrinated blood for this purpose, for the reasons

already given, yet good results may be obtained with the materials usually employed for rectal feeding, provided the patient can live much in the open air. I am convinced that rectal alimentation should enter largely into the institutional management of phthisis. In private practice it is difficult to carry it out, especially in its most effective form,—that is, with defibrinated blood.

I have said nothing in regard to the use of alcohol as food. The subject is too large to be entered upon on this occasion. I will only say that I have yet to be convinced that alcohol has not a nutritive value, if not directly, at least as aiding in the assimilation of other material. Clinically its usefulness seems to me more than as a simple stimulant. Both in acute and chronic pulmonary disease I believe that, carefully employed, it has a place that cannot be filled by any other agent. The quantity given need not be great, and if the odor of alcohol in the breath is persistent and very noticeable, it is a sign that the proper dosage is being exceeded.

The foregoing is a necessarily brief and imperfect presentation of a subject the details of which would repay thorough consideration.

ON THE RADICAL CURE OF HERNIA.

BY J. H. CARSTENS, M.D.,

Professor of Obstetrics and Clinical Gynæcology, Detroit College of Medicine.

When I was in general practice I was called upon sometimes, like every other practitioner, to operate for strangulated hernia. I did the operation in the way in vogue at that time.

When the subject of drainage came up I made use of that, but as it seemed to me that the drainage-tube, either of glass, rubber, or gauze, would make a weak point, I encircled the ring with a silk ligature, which I left loose at the time, but after removing the drainage-tube I tied the ligature tight. The ring where the tube had been, being denuded of epithelium, would firmly unite by being brought closely together. Thus I made a radical cure of two such cases.

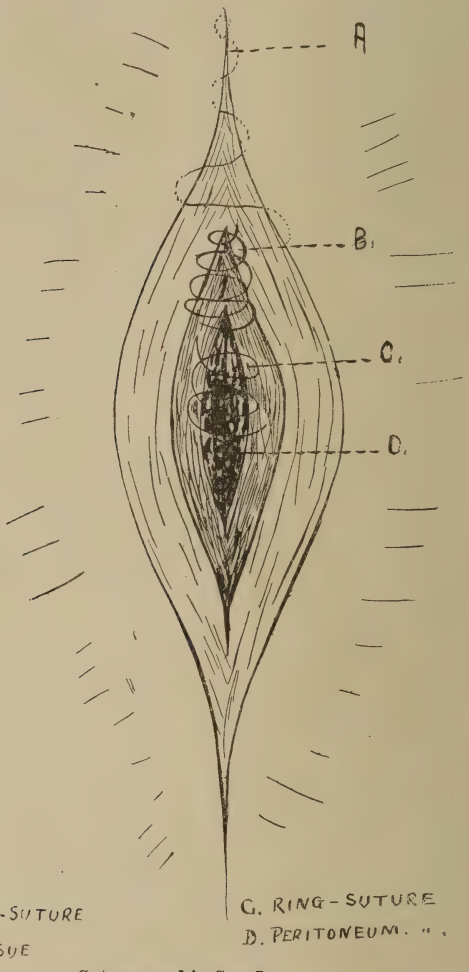
I only had eight cases altogether; seven recovered and one died, the latter being an old lady, seventy-three years of age, who succumbed a week after the operation, apparently of apoplexy.

When I devoted myself to abdominal surgery especially, I tried to sew up the abdominal incision so that no hernia would result. I naturally thought considerable about the radical cure of hernia, but did not see a case for two years until I was called to—

Case I.—Mrs. H., aged thirty-nine years; no children; she had been sick for three days, with vomiting. I suspected intestinal obstruction, and found a strangulated femoral hernia, which, however, she claimed had existed a long time without causing trouble. I induced her to go to Harper's Hospital, and on February 4, 1892,

I operated. I resected the sac and sewed the cut edges of the peritoneum together with a running suture; I then continued with the same ligature to sew the ring together, then the fascia and fat, and closed the skin with a few interrupted sutures of silkworm-gut. (Fig. 1.) She made a splendid recovery, and to-day there is no appearance of the hernia.

Fig. 1.



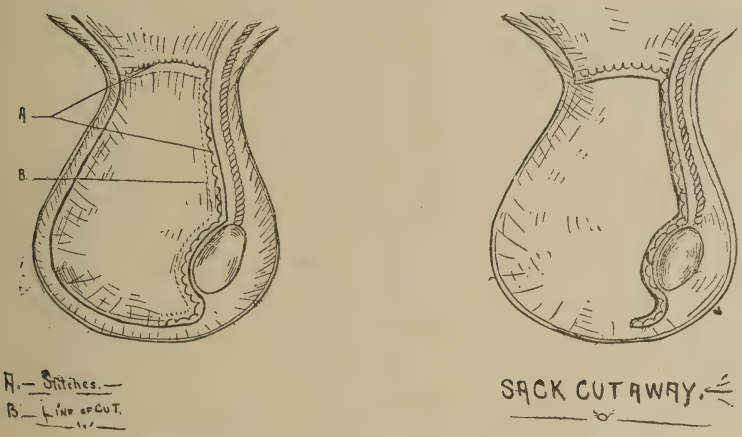
Sutures used in Case I.

Case II.—Mrs. H., aged forty years. This is Case I., upon whom I operated about a year ago, for strangulated femoral hernia on the left side. She was taken with severe pains in the region of the right femoral ring, and had been sick for four days with inability to retain food, constipation, etc. But being afraid she might have to undergo another operation, she did not call a physician until her symptoms became alarming, and I found that the right femoral ring contained a loop of intestines. There was nothing to be done except to operate, so she was again taken to the hospital and an operation was performed on March 11, 1893, on the other side, just as in the first case. Immediate union took place, except a slight stitch abscess in the upper part of the incision. The stitch-hole abscess weakened the parts and there is a slight bulging in one place, no real hernia, and no trusses worn.

Case III.—Charlie S., one year old, has been at the Woman's Hospital since

birth; had congenital hernia which became strangulated every week or two, and could only be reduced after the administration of chloroform. These strangulations occurred at shorter intervals, and I decided to make a radical cure. I made the usual incision, separated the sack containing the intestines, and then with the kangaroo tendon carefully sewed the testicle on one side, and sewing upward also kept the cord on one side, and then crossed directly with the ligature. (Fig. 2.) The super-

Fig. 2.



Diagrammatic scheme showing method of operating in Case III.

fluous mass was removed with scissors, and once more with a running stitch the upper part was sewed across and the peritoneum shoved in and the hernial opening carefully closed. The superficial fascia and fat were brought together with another row of sutures, and then the skin was carefully sewed with a buried suture. I operated on him February 12, 1893, and the little fellow has not had any evidence of hernia since, as the wound healed solidly by first intention.

Case IV.—Mrs. S. had an immense umbilical hernia, which occasionally became strangulated and caused her great distress. I offered to make a radical cure, to which she readily consented.

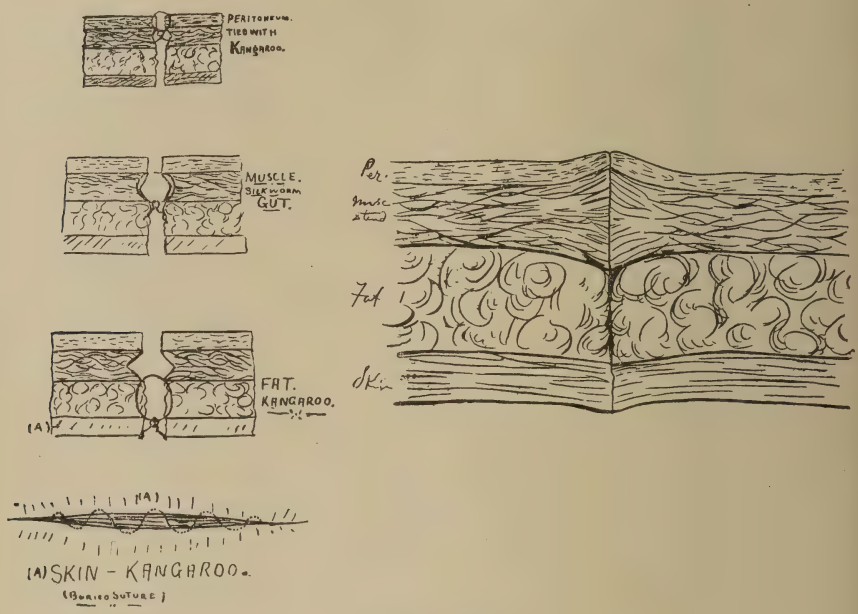
She went to Harper's Hospital, and I operated May 24, 1893. I cut down to the peritoneum and found part of the omentum and intestines adherent to the ring. These I loosened, removed the sac carefully, brought the peritoneum together with a running stitch of kangaroo tendon, then scraped the ring so as to have it raw, and brought that together also with the same running suture. Then I brought the fat together, of which there must have been at least six inches, in three tiers, and then the skin in the usual way. I would say that she weighed three hundred and forty-nine pounds, but she denied weighing any more than three hundred; in fact, my experience of cases of umbilical hernia is that they always occur in fat women.

Everything healed up by first intention, and all her distressing symptoms have been removed, and the hernia radically cured.

Case V.—Mrs. M., forty years old, mother of eight children, came from the northern part of the State to be delivered at the House of Providence. She had a very large umbilical hernia, and I expected we might have trouble with her, but one day she left the institution to visit an aunt, and before the aunt knew what the trouble was, they had a baby in the house. The delivery was very easy and the hernia caused no trouble. Fifteen days after she went to St. Mary's Hospital and I operated on her April 20, 1894. I dissected up the skin and the fat down to the peritoneum and removed the large hernial sack. The peritoneum was carefully brought together with kangaroo tendon. The large ring was hard and cartilaginous;

this I split all round, separated the split, and brought the raw surfaces carefully together in the region of the linea alba. I used silkworm-gut interrupted, putting in about ten sutures a quarter of an inch apart; these were left there, and will, no doubt, stay there and keep the opening thoroughly well closed. The cellular tissue and fat were now brought together in tiers with kangaroo tendon and the skin in the usual manner with the same material. (Fig. 3.) The cut was sealed with

FIG. 3.



Sutures used in Case V.

collodion and the proper dressing applied. The union was perfect; absolutely no bad symptoms developed, although the patient was allowed to nurse her child.

In cases of this kind with much adipose tissue and during the childbearing period, I think this method of burying permanent sutures is the safest.

CASE VI.—A. S., female, aged twelve, has had a congenital hernia from childhood. It is direct inguinal hernia very near the symphysis. Very great trouble was experienced in getting properly-fitting trusses: dozens of different kinds from various parts of the country were tried, until finally one was found which answered the purpose; but the pressure caused so much distress and excoriation that the parents finally decided to have an operation for radical cure. The patient was operated on at her home April 19, 1894. The usual incision was made down through the ring and up to the peritoneum, but the latter was not opened. The ring was scraped so as to make it raw, and then it was carefully brought together with kangaroo tendon with a running stitch which was frequently knotted. Then the fascia and cellular tissues were brought together with the same ligature, as also the fat and skin. The ligature was buried and the usual dressing applied; temperature normal.

CASE VII.—Alice M., aged nine years, sister of the above with identically the same rupture on the right side, operated on the same day and in the same manner. In these cases, where it is not necessary to open the peritoneum, the danger is very slight.

CASE VIII.—Mrs. M., aged forty-eight. This patient was operated on three years ago by me for dermoid tumor, where I used the large *en masse* suture of silk-

worm-gut; the result was a ventral hernia which caused her great trouble, so that I decided to operate on her again, which I did January 15, 1894, at her home, kindly assisted by Dr. Longyear. I made the usual resection; found some adhesions of the intestines and omentum which were loosened. The superabundant sack was removed, and the peritoneum brought together with kangaroo tendon. The ring of the rupture, which was very irregular in shape, was split and brought together with interrupted silkworm-gut sutures which were cut short and buried. The fascia, fat, and skin were brought together in tiers in the usual manner with kangaroo tendon. At the lower angle of the wound a stitch abscess developed which is still discharging slightly. This may be caused by one of the silkworm-gut sutures, and it may be necessary to remove the latter.

Case IX.—Mr. A. J., aged seventy-six years, had had an inguinal hernia for forty years or more, and had worn dozens of trusses of different kinds which very imperfectly kept the opening closed, and had frequent attacks of strangulation which were easily reduced by taxis under chloroform. But within the last six months the attacks had become more frequent, so that he had one every week, and finally consented to have an operation performed for radical cure. When he was again attacked, January 25, 1894, with strangulation, Dr. Bonning, the family physician, asked me to see him. He was taken to Harper's Hospital, and after the usual antiseptic preparatory treatment, we operated on him. There was an immense sack about six inches long and three inches across. The ring was quite large so that one would hardly suspect strangulation. The sack was removed, the peritoneum carefully sewed across, then the ring was brought together after being denuded on the edges, and the balance of the incision closed in the usual manner. The immense hole left in the scrotum where the sack had been removed was also sewed in layers, and the skin brought together in the usual manner. The old gentleman made a splendid recovery, although a slight abscess formed at the lower end of the scrotum.

DIFFUSE INTERSTITIAL PROLIFERATION AFTER FIBRINOUS PNEUMONIA.

BY LUDVIG HEKTOEN, M.D.,

Pathologist to the Cook County Hospital, Chicago.

It has occasionally been noted that an attack of fibrinous pneumonia fails to terminate with the crisis, or that the critical symptoms are somewhat atypical, and that there follow an irregular fever, progressive debility, and continued pulmonary consolidation, soon ending in death; or, the more acute symptoms disappearing, there gradually develop the physical signs of chronic interstitial pneumonia.

Following some of the earlier fatal cases to the post-mortem, there will be found retained exudate and diffuse interstitial changes, depending in degree upon the length of time that elapsed since the beginning of the disease. Oftenest the lungs have been studied anatomically a few weeks—two to eight or so—after the onset of the pneumonia: the portions invaded, usually one or more lobes, are then heavy, solid, firm, dense, and elastic; the cut surface

is smooth, homogeneous, of some shade of red or gray; only a very few casts can be removed by scraping; the pleural layers are usually thick and adherent, but not always; and frequently the glands at the root of the lung are fibrous and anthracotic.

The histologic changes, thoroughly studied by Charcot,[1] Eppinger,[2] Marchand,[3] Josephson,[4] Lindemann,[5] Kohn,[6] v. Kahlden,[7] and others, consist in the main of retention, wholly or in part, of the degenerated fibrinous exudate, and of diffuse connective-tissue proliferation. The large or small plugs of exudate are infiltrated with embryonal cells and usually the walls of the alveoli are thickened; the masses of granulation cells that accumulate in the air-spaces gradually become vascularized and change into mature tissue, and the spaces may be completely obliterated or epithelium may clothe the heap of connective tissue occupying the greater part of the alveolus.

The new tissue and the new vessels come from the connective tissue and vessels in the alveolar walls, the interlobular, bronchial, and peribronchial structures, and the pleura, all of which may show much thickening.

The retention of the exudate is usually regarded as a sufficient tissue irritant to cause the proliferation, and Orth[8] compares the process to the changes that take place in the substitution of a thrombus by connective tissue from the vessel wall.

In many cases the bacteriologic examination has been negative, as in Rieder's[9] and v. Kahlden's[10] cases; in none of the latter's cases had the disease lasted more than five weeks. Zand[11] found cocci, like pneumococci, in four cases of commencing post-pneumonic proliferation, and Fränkel[12] found streptococci in one case.

On account of the well-known brief viability and early loss of virulence of the micrococcus lanceolatus,[13] it may disappear early from the tissue in some cases, while in others again it may remain demonstrable for some length of time.

In diffuse connective-tissue proliferation after pneumonia retention of the fibrinous exudate has invariably been established in the cases examined post mortem within a reasonable time—a few weeks—after the onset of the disease. The process of resolution seems to be arrested at or soon after the

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[1] Maladies des Poumons, etc., Paris, 1888.
[2] Prag. Vierteljahresschr., vol. cxv.
[3] Virchow's Archiv, vol. lxxxii.
[4] Dissertation, 1884.
[5] Dissertation, 1885.
[6] Münch. med. Wochenschr., 1893.
[7] Ziegler's Beiträge, 13, 1893.
[8] Path. Anatomy.
[9] Jahrb. d. Hamburg. Staatskrankenanst., i. 1889.
[10] Loc. cit.
[11] Riforma medica, 1888.
[12] Deutsche med. Wochenschrift.
[13] Welch, Johns Hopkins Hospit. Bulletin, 1892.

beginning of gray hepatization, as shown histologically, and the exact cause of this arrest cannot always be definitely specified. It is usually thought, however, that any of the following conditions, singly or combined, may interfere with the removal of the extensive pneumonic exudate:

1. *Constitutional Conditions.*—Many writers point out that induration after pneumonia is likely to occur in patients with debility from various causes, such as repeated attacks of intermittent malarial fever, advanced age, underfeeding, alcoholism, exposure and neglect during the early days of the attack, and repeated attacks of pneumonia. The general enfeeblement may, it is thought, aid certain local conditions in preventing the prompt removal of the exudate.

2. *Local Conditions.*—"A part of the pneumonic exudate is removed by expectoration, but the larger portion is carried away by the lymph-vessels to the general circulation. Should there exist marked disease of these vessels in a lung, the seat of a croupous pneumonia, there might follow a serious disturbance in the process of resorption. These problems have not been studied, in spite of the fact that they are of the greatest importance with respect to the termination of pneumonia."[1]

In the majority of cases of proliferation after pneumonia firm and old pleuritic adhesions have been found over the affected portion; such adhesions limit thoracic expansion and place the lung in a condition of greater quietude than normal, and thus manifestly interfere with the lymph circulation and the absorption as well as the expectoration of the exudate.

Quite frequently pleurogenous interlobular thickening has been found that might directly compress the lymph-vessels.[2]

Then, again, anthracosis of the lymph glands at the root of the lung may interfere with ready lymph filtration.[3]

Prolonged and repeated attacks of pneumonia have been held responsible for the induration, because of probable changes in the lymphatics that render the removal of the exudate slow and difficult.

Von Kahlden[4] mentions that in some of his cases the amount of fibrinous exudate formed was excessive, and that such dense masses might resist the obscure chemical changes that lead to colliquefaction and removal of the inflammatory products.

Delayed resolution, the final outcome of which is full restoration, may follow pneumonia.

Leyden, Charcot, Trousseau, and many others[5] describe cases in which resolution required from twenty to one hundred and fifty days, at which time recovery was regarded as perfect.

Aulde found the following changes in a lung of delayed resolution of

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[1] Eichhorst, Spec. Path. u. Therapie, i. 1890.
[2] Kösler, Berl. klin. Wochenschr., 1883.
[3] Kohn, loc. cit.
[4] Loc. cit.
[5] Quoted by Aulde, British Medical Journal, 1893, i. 1317.

about forty days' standing, the patient dying from meningitis due to capsule cocci: the alveoli contained large quantities of degenerating exudate, the alveolar epithelium was only moderately damaged, and there was only slight interstitial proliferation. Aulde believed the tardy absorption to be due to changes in the lymphatics following a pre-existing chronic bronchitis.

Why are not interstitial changes always observed when prompt absorption fails to occur? While an absolutely satisfactory reply may not be obtained, yet it appears that between delayed resolution on the one hand and fibroid induration on the other there is only a difference in the degree of interstitial proliferation; in all the cases of delayed resolution examined post mortem—Charcot, Cornil et Ranvier, Aulde[1]—some interstitial changes were present.

The slow and gradual removal of the exudate in delayed resolution, and the earlier restoration of the alveolar epithelium, would not seem likely to cause such extensive changes as the retention of all or nearly all the exudate, which would prevent the spaces from collapsing and cause more diffuse irritation.

While it undoubtedly is in accordance with sound general pathology to attribute diffuse proliferation to the irritation of retained exudate in the alveoli, the epithelium of which has undergone desquamation, yet it may be possible that interstitial changes commence very early in the attack, and that the exudate may be retained on account of these very changes, and not *vice versa*. The very early development of the interstitial proliferation in some of the cases described by v. Kahlden[2] and others points rather in the direction last indicated.

In connection with this it must not be forgotten that some considerable degree of cellular infiltration of the lung tissue itself occurs temporarily during the resorption of the pneumonic exudate,[3] and that it is consequently possible to attach too much weight to this condition in cases of suspected early induration after a comparatively short illness.

In direct contradiction to the teaching that fibrinous pneumonia may lead to induration, the exudate remaining in the alveoli, are such statements as this: "Regular exudative pneumonia terminates only in resolution or in death: a lobar pneumonia with the production of new connective tissue is from the first a special form of lung inflammation."[4] A little further on the same author states that there is no reason to believe that the pus and the fibrin are ever replaced by connective tissue: he believes that there is a form of pneumonia which is characterized in equal degree by exudation and by interstitial changes, and that the instances regarded as connective-tissue proliferation after lobar pneumonia are really examples of this special form

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[1] Loc. cit. [2] Loc. cit.

[3] Ziegler, Lehrbuch der spec. path. Anatomie, 1892, p. 681.

[4] Delafield, Transactions of the New York State Medical Society, 1891. See, also, Delafield and Prudden's Pathology, Anatomy, and Histology, 1892, p. 363.

of lung disease. Twelve cases are cited as illustrative of this novel pneumonia. Clinically, the course of these cases does not appear to differ materially from that of an ordinary fibrinous pneumonia up to a certain point: histologically there was found an intra-alveolar fibrinous exudate, which in some of the cases was degenerate, and diffuse interstitial changes; nothing is said of any specific etiology at all, and the duration of the disease was from six to fifty-two days, which gives abundant time in the majority of the cases for the development of connective-tissue changes on the theory of irritation due to the retained exudate, while in the early instances the interstitial infiltration may have been simply transient during the process of resolution.[1]

While it is not intended to deny the existence of a pneumonia with exudative and interstitial changes of equal intensity, such as the "primary parenchymatous pneumonia" of Heitler, or the "subacute indurative pneumonia" of Kidd, and the similar special disease of Delafield, yet it does not seem rational to at once dismiss the belief that some instances of genuine lobar pneumonia terminate in interstitial proliferation by assuming, on the insufficient demonstration above alluded to, that all cases regarded as such are really and invariably a special, new form of lung inflammation from the start.

Of all the various modes of termination of croupous pneumonia that of diffuse interstitial change is the least frequent. It was found once in Osler's one hundred cases of pneumonia examined after death. Dr. E. F. Wells tells me, in a personal communication, that it occurred twice in his series of four hundred and ninety-eight clinical cases; he adds that Andral encountered one case in one hundred and twelve instances of pneumonia.

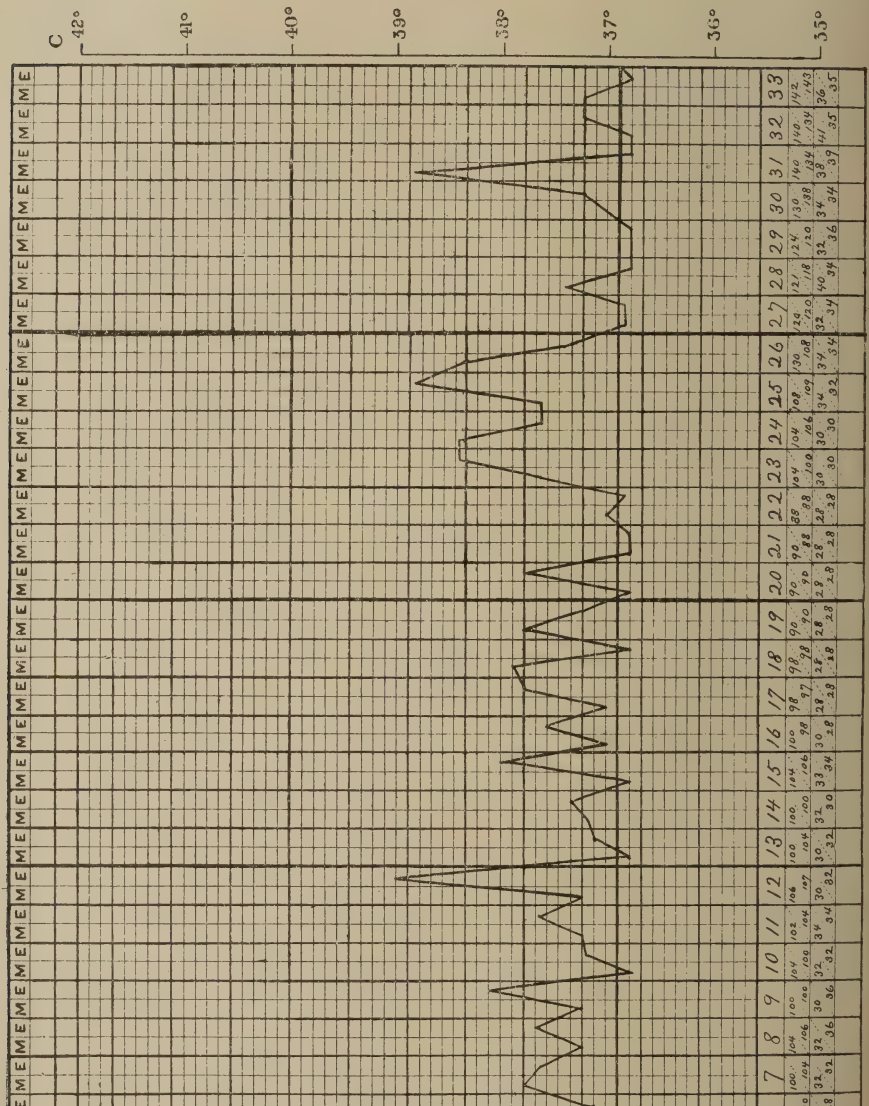
The following case, which clearly shows the genesis of the interstitial proliferation in lobar pneumonia caused by the micrococcus lanceolatus, is the only one of induration recorded among one hundred and twenty cases of pneumonia examined post mortem in the Cook County Hospital during the last four years.

M., salesman, white, fifty years old, native of Switzerland, came under observation March 29, 1893, in the Cook County Hospital. The family history is of no special interest in this connection, and the various members of the family appear to have reached a fairly advanced age. There was no obtainable record of any venereal disease. He is a temperate man. The only sickness he has had was yellow fever twenty-five years ago. The illness that brings him to the hospital commenced three days ago—March 26—with weakness, anorexia, and coughing. The condition on admission was as follows:[2] The patient is poorly nourished, small in stature; arcus senilis in both eyes; herpes on the lower lip; the tongue is dry, gray-red; the cough brings up frothy, stringy mucus. There is absence of re-

[1] Ziegler, loc. cit.

[2] I am indebted to my friends Drs. Le Count and McGrew for the clinical record from which this extract was made.

spiratory motion over the entire right half of the thorax, increased vocal fremitus and absolute dulness, with bronchophony and bronchial breathing; over the lower lobe posteriorly there are small crepitant râles. The



heart and the left lung were quite negative. The urine was 1020 in specific gravity; showed Ehrlich's reaction; no albumin.

The condition above outlined continued without any material modification until May 7, when he died; from April 4 to April 20 he was up and

about the ward; from the last date he refused the prescribed nourishment, the emaciation increasing rapidly and noticeably; he gradually lapsed into a stupor, from which he could be roused momentarily. The duration of the illness was forty-three days.

As the medicines given consisted almost entirely of tonics and stimulants, the annexed chart may be of some interest, as it represents the temperature uninfluenced by antipyretics and hydrotherapy.

The post-mortem examination showed the body to be much emaciated. Only the morbid appearances will be mentioned, commencing with the lungs. The left pleural cavity contained a few adhesions posteriorly; the right cavity was completely obliterated by dense and firm adhesions, which subsequently necessitated the separation of the entire parietal pleura in order to remove the lung.

The left lung crepitated throughout; on the cut surface of the lower lobe were noticed a few broncho-pneumonic areas, granular and grayish-red. It weighed four hundred and fifty grammes.

The right lung weighed eleven hundred and fifty grammes; it was heavy, hard, and solid, sinking at once in the water; the amalgamated pleural layers were thick, measuring one centimetre in places; on the external surface the lung showed elevations and depressions corresponding to the ribs and intercostal spaces.

On the cut surface the lung parenchyma was of a quite light-gray color, with here and there a red tinge; scattered over the surface were innumerable black spots, small and irregular; in the lower lobe were a few yellow spots as large as a pin-head, of soft consistence, but in general the section surface was homogeneous and smooth, and on scraping it with the knife a very few, small, gray casts appear on the blade. As already stated, the lung was firm and hard, and there was added an element of elasticity which was far different from the friability so characteristic of the ordinary solidifications due to lobar pneumonia; it was not possible to break through this lung-substance by means of the strength in the single index finger, and almost immediately after removing the finger the resilient lung parenchyma returned to its former outline. Compression brought some gray, thick, purulent material out of the bronchi, while from the parenchyma there exuded thinner, grayish, almost clear fluid, together with a considerable quantity of blood. The interlobar fissures were obliterated, and it was difficult to trace them on the cut surface. In the lower lobe were small cavities—three were exposed—containing a few cubic centimetres of thick purulent material, and lined with soft, shreddy walls; in a pleuritic sacculation between the inferior surface of the lung and the diaphragm was a collection of say thirty cubic centimetres of pus, and immediately above this the lung was found to be honeycombed with a few very small foci of softening. The glands at the root of the lungs were as large as walnuts, black on the cut surface, and one contained a small focus of calcareous material, and there was also found a single calcareous nodule, one centimetre in diameter, embedded in a firm capsule of slaty

connective tissue in the lower right lobe. These were the only macroscopic foci of tuberculosis discovered, and particular care was used in the examination as to this point.

The heart weighed two hundred grammes. The coronaries were very sclerotic, convoluted, and, in fact, so stiff as to break, and while there were no foci of myocardial degeneration, teased specimens showed increased pigmentation and indistinct striation in the muscle.

The kidneys together weighed three hundred and twenty grammes. The capsules were adherent in places, the surface was not perfectly smooth, the consistence was certainly firmer than normal; the cortex measured five millimetres, and the striations were indistinct. Frozen sections showed chronic as well as acute interstitial changes.

The liver weighed thirteen hundred and twenty grammes; it had a nutmeg cut surface, but there was no unusually marked firmness.

The intestines and stomach were negative on examination, while the brain was not examined.

The microscopic changes may be epitomized as follows: The changes are diffuse and equally well marked throughout the entire lung. The alveolar walls appear universally thickened, due principally to accumulation of young, spindle-shaped, connective cells, as well as—but in a minor degree—to round-cell infiltration.

The blood-vessels are not prominent; only occasionally are groups of vessels distended with blood observed.

The alveoli invariably contain something; usually the spaces are not entirely filled, and under all circumstances the walls remain clearly distinguishable except in a very few instances of intense, focal, round-cell infiltration; the alveolar contents are composed either of a fibrinous network entangling cells, in some places black pigment masses, and a more or less formless detritus, or the fibrin appears to be quite absent, while the other constituents remain.

Sections stained for fibrin, after Weigert's method, show the network to be attached to the alveolar walls, either by a number of thread-like prolongations, by a broad base, or by a slender peduncle, and sometimes the network appears continuous with that in neighboring cells by means of bundles of slender threads that pass through the intervening wall.

The alveolar epithelium is usually entirely absent; sometimes a cell or two remain attached to the wall, at other times they appear crowded into one corner by the intra-alveolar network.

The cells contained in the exudate are in part leucocytes, with many lobulated or fragmented nuclei, in part oval or short spindle-shaped cells with single large nuclei; most often the cells are scattered indiscriminately through the mass, while in a few places the air-cell is only partly occupied by a somewhat dense, polypoid, pedunculated growth composed almost exclusively of granulation cells; in a few places such cells can be seen in the act apparently of leaving the alveolar wall and passing into the cavity of the

air-space. Very frequently the cells in the alveolar contents show irregular, black pigment masses in their interior; similar masses are also found outside of the cells in the exudate and in the walls of the alveoli; this pigment does not in any way differ from the pigment so often found as the result of inhalation.

The more or less formless detritus consists of granules and granular as well as more homogeneous masses. Under a low power these granules remind one of cocci, but with the immersion lens their form and their shape are seen to be so inconstant that it is impossible to specify their nature any more definitely than as detritus—unless, indeed, they may be dead and involuted lanceolate micrococci, because they are stained in sections treated after Weigert's fibrin method, they are found in the interior of leucocytes, and they often appear to be surrounded by a mass of faintly-stained homogeneous material of irregular size and shape; small homogeneous masses are also present that may be empty and broken capsules.

The micrococcus lanceolatus and other micro-organisms were searched for in sections stained with Löffler's methyl-blue, after Gram's method and after Weigert's fibrin method, and in the Weigert sections occasional typical, encapsulated diplococci were found which in no way differed from the micrococcus lanceolatus; they were found in the intra-alveolar contents only. Tubercle bacilli were not found. The changes above outlined extended into the infundibula, and the bronchial mucous membrane showed extensive desquamation.

The connective tissue in the interlobular septa was much thickened, dense, wavy, and fibrillated.

Cover-slip preparations from the autopsy made with scrapings from the lung surface and from the contents of the small abscesses were stained with gentian-violet, Löffler's blue, etc., and they showed diplococci in capsules, the latter remaining unstained even when special methods were employed to bring them into view. Not infrequently the capsules appeared empty; again there were capsules that contained single, deeply-stained, irregularly-shaped bodies or two masses of unequal size. The smears from the abscesses showed many more capsule-cocci and masses than those from the lung surface. There were no streptococci or bacilli upon the cover-glasses. The cultivation experiments resulted as follows: Small surface and deep colonies were obtained in agar, glycerin agar, and gelatin. The inoculations were made from the abscess contents and from the solid lung tissue. The colonies consisted of minute, pin-point sized, grayish areas, usually round or slightly irregular. They increased very slowly in size, remaining stationary after about seven days. Series of cultures were made with the same results. The colonies consisted of small cocci usually presenting no characteristic arrangement, sometimes occurring in rows of three or four, while frequently there would be larger cocci in pairs, without any capsule, as a rule, although in some instances a faint capsule could be observed. No animal inoculations were made.

Remarks.—In this case the development of diffuse interstitial changes throughout the whole right lung in sequence of a fibrinous pneumonia, after which resolution failed to occur, is quite definitely established.

Clinically, the early constitutional symptoms are mild in view of the extent of the lung lesion, the physical signs of which are definite and well marked. Crisis fails to occur, the physical signs due to the consolidation persist, the patient dying in forty-three days from asthenia.

The whole right lung is found solid, of increased weight due to the retention of the fibrinous exudate and to diffuse, luxuriant, and advanced interstitial proliferation; small areas of purulent disintegration and a metapneumonic sacculated empyema were present; there were found also a fibrous pleuritis and anthracosis of the regional lymphatic glands, conditions that in addition to the general, senile changes in the circulatory system, especially the heart, would seriously interfere with the absorption and removal of the exudate.

The only microbe that the results of the examination allow us to associate with this process is the micrococcus lanceolatus, involution forms of which appear in the exudate, the cultures being of low vitality.

For these reasons, the conclusion that the interstitial changes described stand in direct connection with the retention of the exudate after a fibrinous pneumonia due to the micrococcus lanceolatus appears warranted. For the same reasons the statement by Delafield[1] that "fibrinous pneumonia terminates either in resolution or in death" may be characterized as too positive and too sweeping.

Conclusions.—1. Clinical, histologic, and bacteriologic observations show that fibrinous pneumonia may lead to diffuse interstitial proliferation and ultimately to pulmonary cirrhosis.

2. Interstitial proliferation and persistence of the inflammatory exudation appear to bear close relation to each other. Diffuse interstitial changes have not been found in lungs in which the pneumonic exudate had undergone resolution and absorption. The persistent inflammatory exudate maintains the alveoli in distention, hinders epithelial reproduction, and, in short, enacts the *rôle* of an irritating foreign body at the same time that it presents a groundwork for the growth of granulation tissue.

3. Failure to remove the inflammatory products by lymphatic absorption, and incidentally by expectoration, depends upon (*a*) absence of resolution,—*i.e.*, softening does not occur freely, and hence the exudate does not become fit for ready removal, which may be blocked by (*b*) mechanical obstruction in the pulmonary lymphatic apparatus, and (*c*) on account of general degenerative conditions in the body, especially the vascular system.

4. It is not impossible that the proliferation might be due to the primary, direct effect of the microbic invasion. This seems in fact likely in those lungs that present interstitial changes a few days after the onset of the

[1] Loc. cit.

pneumonia; but inasmuch as such changes are, to a certain degree, characteristic of pneumonia, being transitory and incidental to the absorption of the exudate, it becomes very hard to define the exact relation between proliferation and retention of the inflammatory product. Taking, however, the considerations stated in conclusions 2 and 3 into view, it seems clear that the interstitial changes depend essentially upon the retention of the exudate and not *vice versa*.

USE OF THE ABDOMINAL DRAINAGE-TUBE DETERMINED BY BACTERIOLOGICAL EXAMINATION.[1]

BY C. B. PENROSE, M.D.,

Professor of Gynæcology in the University of Pennsylvania, Philadelphia, Pennsylvania.

THE subject of drainage in abdominal surgery is one about which there is still great difference of opinion, though this difference is much less than it was only a few years ago. Some operators never used drainage at all after any operations, and yet obtained exceedingly good results; while others obtained equal results, and their statistics showed that they employed drainage in a proportion of their cases which varied, according to the individual taste of the operator, from five or ten per cent. to seventy-five per cent.

The general advice given by the advocates of drainage was, "When in doubt, drain." It was this element of doubt which caused the diversity of practice. The doubting operators drained the most. Everything which increases our knowledge in regard to the facts which determine drainage diminishes our doubts and brings about more uniformity of practice.

We drain the abdomen for two reasons,—for hemorrhage and for septic material. As the experience of the operator increases and his skill in enucleating tumors becomes greater, he has less hemorrhage and, other things being equal, he drains less. Our methods of controlling hemorrhage in abdominal operations are better than they were a few years ago, the Trendelenburg posture enabling us to check bleeding from small vessels in the bottom of the pelvis, which before the introduction of this position required drainage. The operator who enucleates pelvic tumors with two fingers and closes the abdomen without seeing what he has done will necessarily have much more doubt in regard to hemorrhage and will use the drainage-tube much more frequently than the operator who inspects the field of enucleation before closing the abdomen.

The second reason for drainage is the septic character of the material

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[1] Read before the Philadelphia Academy of Surgery, June 4, 1894. This article is not contributed exclusively to the INTERNATIONAL MEDICAL MAGAZINE, but has been sent at the same time to several journals for publication.

which escapes or is retained in the abdomen. Knowledge in regard to this fact is of great value in deciding about drainage in any case.

During the past winter, at the University Hospital, an immediate bacteriological examination has been made of the contents of every tubal or ovarian tumor which was ruptured during removal. And the report of the pathologist in regard to the septic or the aseptic character of the contents has determined my decision in regard to the use of the drainage-tube.

I, unfortunately, have no record of the total number of cases in which such examinations have been made; but the results have been exceedingly satisfactory, for out of a series of forty-six cœliotomies, drainage was only used three or four times for hemorrhage, and only once because the microscope showed the material which escaped into the abdomen to be septic. There has been no case of peritonitis or sepsis among this series.

The tubal contents in most cases of salpingitis are sterile. Shauta (*Archiv für Gynäkologie*, 1893, No. 44) reports one hundred and ninety-two cases of salpingitis, in one hundred and forty-four of which the contents of the tubes were sterile, in thirty-three there were gonococci, and in fifteen streptococci or staphylococci.

Before I began to use this method of bacteriological examination I inserted a drainage-tube in every case of tubal and ovarian abscess where the contents escaped into the peritoneum. Now I neither irrigate nor use the drainage-tube unless the microscope shows these contents to be septic. The presence of gonococci in small numbers does not necessitate drainage. Recently the value of this bacteriological examination was illustrated by two cases operated on consecutively. Each woman had a tubo-ovarian abscess, caused by sepsis at labor. In each case the abscess was ruptured during removal, and the pelvis filled with pus. In the first the pus was found to be sterile, and I closed the abdomen without irrigation or drainage. In the second the pus contained streptococci, staphylococci, and bacilli coli communes. Consequently, the pelvis was thoroughly washed out and drained. Both women recovered without peritonitis or sepsis, though the convalescence of the first was very much easier than that of the second.

The examinations have been made for me by Dr. Beyea. Cover-glass preparations of the material to be examined are made and are fixed in the flame of an alcohol lamp, and then stained with carbol-fuchsin. The microscopic examination is made with a Leitz $\frac{1}{12}$ oil immersion lens.

The examination is quickly and easily made, and I think that no operating-room is completely equipped without facilities for such bacteriological examinations. They furnish us with scientific data from which we can determine the propriety of an important surgical procedure, which otherwise would depend upon the whim or prejudice of the operator.

ATROPHIC RHINITIS.[1]

BY PRICE BROWN, M.D.,
Toronto, Canada.

In selecting atrophic rhinitis as the subject of my paper, I was guided not only by the importance of the subject itself, but also by the fact that so little attention, as a rule, is paid to it by the general practitioner. Sufferers themselves likewise ignore it, and remain practically without treatment, until it has reached a stage in its development where cure in any real sense has become impossible, and when the most that can be accomplished is arrest of progress, with relief of the most urgent symptoms.

This is the disease which beyond all others has been for generations known by the name of catarrh, as significant of nasal discharge accompanied by foul odor. It is needless to say, however, that catarrh is not a disease, but merely a symptom; and even as a symptom it differs widely both in character and degree, according to the pathological condition to which it owes its origin.

Among the many definitions of atrophic rhinitis given by leading authors, no one, I believe, is so terse and comprehensive as that by Wyatt Wingrave, who says,—

"It may be defined as a progressive and persistent form of dry rhinitis, characterized by a shrinkage of the mucous membrane, which tends to invade contiguous chambers, and is accompanied by the formation of crusts with more or less fœtor of a special character."

Of all the names, such as ozæna, fœtid coryza, dry catarrh, cirrhotic rhinitis, or the most recent one, atrophic ethmoiditis (suggested by Woakes), none is so suitable, I think, as the one which forms the title of this paper, —"rhinitis" being the term invariably applied to inflammation of the mucous membrane of the nose, and "atrophica" being significant of shrinkage of normal tissue wherever found.

The histological observations of Lennox Browne and Bosworth and Wingrave, more particularly the latter, open up a wide field for thoughtful study; and the results of the most recent microscopical examinations are summarized by Wingrave as exhibiting the following changes in every well-marked case of atrophic rhinitis:

1. Transformation of the columnar, ciliated, and special olfactory cells into stratified squamous epithelium.

2. Di-appearance of the hyaloid basement membrane.

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[1] Read before the Ontario Medical Association, Toronto, June 6, 1894.

3. The presence of special hyaloid bodies and pigment masses (first brought to the notice of the profession by Burnett).

4. Changes in the glands.

5. Changes in the lymphoid tissue and blood-vessels.

6. Changes in the bone.

Apart from the shrinkage which takes place in the various layers and in all the constituents of the nasal mucous membrane in this disease, perhaps the most striking features are the changes of the surface epithelium on the one hand, and the rapidly-increasing number of hyaloid bodies on the other.

In the normal state the mucous membrane of the inferior turbinated bones, the lower half of the middle turbinals and the lower two-thirds of the septum, is covered with ciliated epithelium, the special object of the cilia being to propel the serous and mucous discharges of the nose towards the anterior and posterior choanæ, and thus prevent their accumulation within the nasal cavities. In the atrophic condition, however, these cilia are gradually and, when the disease becomes severe, permanently destroyed, their place being taken by a layer of flat, squamous, epithelial cells in a state of constant desquamation. Below this we have stratified cuboidal epithelium in several layers, and then the adenoid or hyaloid layer beneath, with shrunken blood-vessels and acinous glands and cavernous sinuses almost obliterated; so that, in place of a dozen square inches of the ever-moving velvety cilia, we have a flattened smooth surface, deficient in blood-supply, and clinging closely to the irregularities of the spongy bones.

As to the hyaloid bodies, their distinguishing feature is the fact that, although the entire turbinated cushions shrink continually in direct relation to the progress of the disease, these bodies increase in numbers as the disease advances. Wingrave describes them as small, round, refractive, homogeneous masses, embedded in the interlobular tissues of the glands, in the adjacent lymphoid tissue, and sometimes in the stratified epithelium. Their size varies from the two thousandth to the eight hundredth of an inch. Late in the pathological process they break up into minute refractive bodies resembling spores. The question of the nature of these is still *sub judice*. Some biologists believe them to be the parasites of atrophic rhinitis.

As already stated, the rest of the changes in the mucous membrane and turbinated bones are those of constant contraction, permanent shrinkage. The adenoid or hyaloid membrane, which in hypertrophic rhinitis remains intact or increases in dimensions, in this disease shrinks gradually out of existence.

The gland-follicles become crowded with lymph-corpuscles of a low inflammatory type, blocking their lumen, often producing complete disorganization of the acini without ever developing into true hyperplasia. The capillary blood-vessels disappear; the cavernous sinuses become less and less distended; a general fibrosis contracts the vessels, and finally they

too disappear, involving the underlying spongy bones in the common atrophy.

Incidental pathological changes occur in a majority of cases. Out of sixty recorded cases of atrophic rhinitis, the faucial and pharyngeal tonsils had in fifty-six entirely disappeared; while in the remaining four they were small, thus indicating a peculiar relationship between the surrounding lymphoid structures and the atrophic disease.

Perforation of the cartilaginous septum is also of not very infrequent occurrence. It is, however, generally believed to be not so much the direct result of the atrophic disease as of digital picking, the region being so easily accessible to the finger. In my own experience I do not remember a single case of perforated septum coexistent with atrophic disease in which I could not trace the origin of the perforation to the period of childhood. When it comes under the notice of the physician the margin of the perforation will usually be found coated with tenacious mucus, overlying a layer of proliferated epithelium. Very rarely will there be any indications of recent ulceration.

Etiology.—Perhaps there are few subjects in medical science upon which there exist so many differences of opinion as upon the origin of atrophic rhinitis. Bosworth, as is well known, makes the statement that he believes *purulent* rhinitis "to be in every case a cause of or a primary stage of the atrophic form." There are few, if any, other writers who support him in this extreme view, while many, if not all, believe that it may sometimes be the cause. The more general opinion among the profession is that it usually occurs as a sequel of hypertrophic disease. J. N. Mackenzie goes so far as to affirm that "atrophy appears to be always a secondary affection . . . resulting from previous inflammatory thickening." Seiler, while acknowledging that it frequently results from hypertrophy, also says that "it may be of the atrophic variety from the start." Drake claims chronic purulent inflammation of the accessory sinuses as the cause; Gottstein holds that defective development of the turbinated bones is responsible for the disease; and Sajous, while accepting some of the causes already named, very justly says that an unusually dry atmosphere, the inhalation of tobacco smoke, or an abnormal patency of one or both nasal chambers, may any of them be the proximate cause of atrophic disease. Added to all these, as well as the parasitic origin already mentioned, Mayo Collier has recently thrown out the plausible suggestion that it may yet be discovered "that the initial disease was degeneration of the nerve ganglion and nerve fibres supplying the parts."

Personally I have seen a number of cases which I could trace back to purulent rhinitis of childhood, others where I had reason to believe that the atrophy was a sequel to hypertrophy, several in which a certain amount of hypertrophy in one nostril accompanied atrophy in the other, and more than one in which the breathing of a dry atmosphere was shown to be the presumptive cause.

Usually when patients have presented themselves to me for treatment they have already been sufferers for years; but from the histories I have so far been able to obtain, I believe many cases arise from neglected colds, particularly when associated with deviated septum. In these cases mild hypertrophy is the result, producing stenosis and accumulation of mucus, which by its constant presence produces a certain amount of pressure upon the posterior ends of the middle and inferior turbinated bones. This compression at any one time may be small, yet we must remember that these subacute attacks of rhinitis often last for many weeks, and that one cold follows another for a long time before the parts affected are submitted to thorough examination and the result ascertained. One reason why I believe that many cases arise in this way is the fact that in so many instances the atrophic condition is most marked in the deeper portions of the nasal cavities; that is, over the posterior ends of the turbinated bones, while in front we have still existing the septal deviation.

The period when atrophic rhinitis usually comes under observation is that of early adult life, say between fifteen and thirty years. Forty-four out of Wingrave's sixty cases occurred during that period. He also gives a remarkable disproportion in the sexes, forty-nine females to eleven males. In my own case-book I find a record of seventeen cases, nine of whom were females to eight males.

The symptoms are characteristic and are too well known to require a close delineation. They consist of dryness of nose and throat, more particularly the latter, and this quite frequently when the patient can breathe without difficulty through the nose. The shrinkage of the tissues makes the cavities wider, permitting the accumulation of mucus, without interfering in any marked degree with nasal respiration. The normal serous discharge becomes limited and finally disappears, leaving the air dry and foul by the time it reaches the throat. With the diminution of serous fluid there is increase of mucus and increased exfoliation of epithelial cells. These together incrust and clog up the passages. The widened cavity makes forcible expulsion by blowing impossible, and the consequent retention produces the characteristic fœtor. The intensity of the fœtor varies with the severity of the disease and the length of time it has existed. In long-standing cases anosmia is of frequent occurrence, while in a large number the sense of taste is likewise impaired. As collateral events, the faucial and pharyngeal tonsils usually become atrophied, the contiguous sinuses and antra may be involved, and even the Eustachian tubes may be victimized by the disease.

In reference to the cause of the peculiar fœtor of atrophic rhinitis, Wingrave offers a new theory. He says that as the mucous membrane is a transformed epidermal structure, having with its glands a common origin with the skin, so in this disease we have a structural reversion, in the stratification of the surface epithelium, to the primitive type; and in the glands there is established a perverted function; the mucous membrane being con-

verted into cutaneous structure, with a corresponding change in secretion. Following out his argument, he speaks of the various odors produced by different portions of the skin, such as the feet, the axilla, the prepuce, etc., and claims that the odor of atrophic rhinitis has a direct kinship with the others mentioned.

Diagnosis.—Except in its earliest stage, it can rarely be mistaken for anything else. A careful and thorough examination should always, without difficulty, exclude every other disease.

Prognosis.—Most writers agree that, at the best, the prognosis in atrophic rhinitis is a very doubtful quantity. Excluding, of course, malignant and specific diseases, it is more hopeless than any other affection of the nasal organs,—that is, so far as complete and permanent recovery is concerned. Fränkel, of Berlin, says, "A cured ozæna is unknown to me." Bosworth says, "In the advanced stages, characterized by fœtor and in which the turbinated bones have almost entirely disappeared, I have not seen a case cured." Sajous says, "Atrophic rhinitis is perhaps the most unsatisfactory of the nasal affections to treat successfully."

All, however, agree that much can be done to ameliorate the symptoms and make life comfortable; and I believe that, when taken early, and the treatment carried out persistently and faithfully, a cure in some cases can be accomplished; while in the more severe cases freedom from crusts can be insured, fœtor can be kept under control, and the general health and comfort of the patient can be vastly improved.

Treatment.—The initial step is always to thoroughly cleanse the nasal and naso-pharyngeal cavities, for the purpose of removing completely all incrustations wherever located. It matters little how this is accomplished, or what local agents are used, so long as the mucous membrane remains unbroken and the Eustachian tubes uninjured. The drugs used are legion and the methods many. Among the best, however, are simple alkaline and antiseptic solutions, such as Dobell's. The alkali has a solvent action upon mucus, while the carbolic acid has a tendency to neutralize the decomposition going on. This or any similar fluid may be used by the post-nasal spray syringe. The point of the instrument being passed up behind the soft palate, the solution is thrown through the nasal cavities with considerable force. At the same time it loosens the accumulations which so frequently form in the vault of the pharynx. We should always be careful to have our solutions at a blood temperature, and should also fill the instrument a number of times at each sitting.

The method of using the nasal douche and recommending the patient to pass one or two quarts of hot medicated water through the nose, up one nostril and down the other, is advised by some rhinologists. Bosworth, in his recent edition, tells us that our patients should be instructed to follow out this plan daily. There are unbelievers, however, and I am one of them. With such oft-repeated and copious irrigation, there is always the well-recognized danger of frequent floodings of the Eustachian tubes. If

we flood the tubes, we flood the middle ear likewise, and run a serious risk of inflammatory action and subsequent deafness. Of course, if the patient while using the douche assumes the right posture with the head bent forward, and takes the precaution to elevate the palate and so force the fluid round the septum and out through the other naris, without entering the post-nasal pharynx at all, then the Eustachian tubes escape. But granting this to be fully accomplished, the entire object of cleansing has not by any means been secured. The tenacious plugs of foul mucus in the pharyngeal vault have not been touched, much less removed. Hence I hold that this dangerous and ineffectual method of cleansing should only be used under exceptional circumstances, and in those cases only under the direct control of the experienced physician.

The anterior nasal spray, however, produced by compressed air or a good hand atomizer, is a valuable adjunct to the post-nasal treatment; but in the majority of instances the two combined are not sufficient to thoroughly cleanse the parts from crusts. They remove a large part of the accumulations and loosen other parts, but upon some they have comparatively little effect. The work to be completed requires the use of the cotton probe by way of the anterior nares, and the curved cotton holder applied to the pharyngeal vault. In first treatments, especially, this should be done in a painstaking and thorough manner, and always by the aid of anterior and posterior rhinoscopy with a good reflected light.

This first step having been accomplished, it is generally conceded that the next one is to stimulate the atrophic membrane to a better performance of its natural function of secretion. To this end Gottstein recommends plugging the nostrils for twenty-four hours with cotton tampons. This entails a good deal of discomfort to the patient for that period, but upon their removal a flow of mucus follows as a result of the pressure stimulation. When the flow subsides, the nasal cavities are cleansed again and fresh tampons inserted; the whole procedure being repeated as frequently and for as long a period as required.

Woakes uses Gottstein's plugs for the purpose of applying powders of a stimulating character to the diseased mucous membrane. Sajous and Mackenzie advise the use of the galvano-cautery at a white heat passed rapidly over the surfaces. Lennox Browne also favors the same plan, with subsequent insufflations of iodol or iodoform. Bosworth recommends its use with great caution, as a disease attended by constant contraction would scarcely appear to call for much use of a destructive agent. He says, however, that when applied so lightly as to be merely stimulant in its action, a good result is sometimes accomplished by it.

Shurly and Bryson Delavau recommend the galvanic current as a valuable means of treatment, the positive electrode being applied to the nape of the neck, while the negative, wrapped in absorbent cotton, is passed over the mucous membrane; the strength of the current being from four to

seven milliampères and the time from six to fifteen minutes. The *séance* should be at first daily; subsequently on alternate days.

Other methods of treatment are the use of stimulating sprays after cleansing, such as those of thymol, creasote, argenti nitras, etc., of varying strength and frequency, according to the indications attending each distinctive case.

I cannot close this branch of the subject without briefly referring to a new method of treatment, inaugurated during the last two or three years by the Italian school of rhinologists. It consists, after thorough cleansing of the nasal passages, in vibratory massage of the mucous membrane. Braun, of Trieste, was the originator of the plan, and he claims to have met with very marked success in the treatment of a large number of cases. It was discussed quite exhaustively at the Laryngological Section of the International Medical Congress at Rome a few weeks ago, and was endorsed by a number of enthusiastic supporters. Still, it had its opponents, among whom was Professor Chiari, of Vienna, who said he had "never seen any better results from this treatment than from any ordinary painting of the throat." So far, this method of treatment does not seem to have obtained any foothold either in England or America, though if found successful on the Continent it will soon, no doubt, be adopted by the English-speaking peoples.

The massage is produced by an olive-pointed probe, wrapped in cotton-wool and passed into the nostril to the various points requiring treatment. The instrument is held between the thumb and fingers like a pen, and the vibrations are produced by the tetanic contractions of the muscles of the arm and forearm of the operator, as he presses the point of the probe against the mucous membrane he is operating upon. By practice these contractions are said to number about four hundred per minute.

The mucous membrane of the nose covers about forty square centimetres, and the space operated upon will be about one square centimetre at a time. Braun says he makes the time for each vibratory application anywhere from a quarter of a second to a minute, and the whole period of treatment about five minutes to each nostril. Of course, the treatments are preceded by application of cocaine.

As might be expected, the treatment, however beneficial to the patient, is both difficult and fatiguing to the operator; the latter particularly, as in each case it has to be practised regularly a large number of times. To overcome this difficulty, and at the same time to make the rhythm of vibration more regular and rapid, various electro-motive instruments have been made, from which their originators claim to have produced even better results than by manual vibration.

As this method of treatment appears to be plausible, I have commenced to try it in two cases; they are, however, too recent to bear reporting upon.

On looking over the history of my own cases, I find that my treatment

has gradually undergone a change as the result of personal experience,—becoming more thorough in manipulation, and at the same time more mild in character, than it was during the earlier years of practice. With the post-nasal syringe, the anterior nasal spray, the cotton holder soaked in albolen, and the post-nasal curved cotton probe saturated with the like fluid, I usually succeed at the first sitting in thoroughly cleansing the nasal cavities and the post-pharyngeal vault. This use of the cotton holders requires, of course, the aid of the anterior and posterior rhinoscopes. Although this preliminary treatment necessitates both care and patience, yet it is comparatively painless and is almost always bloodless. Even when the green, offensive incrustation is thick and putrid, we rarely meet with any ulceration; and often, while the contracted mucous membrane clings closely to the irregularities of the shrunken turbinated bones, its surface, with all the irritation of cleansing, remains still unbroken.

Sometimes, after removing the incrustations as thoroughly as possible, I would find a thick layer of tenacious epithelium, projecting from the lower border of the middle or inferior turbinated bones, which would defy all efforts of ordinary cleansing. If this persisted through several treatments, severer measures would be required. Occasionally a solution of argenti nitras, ten per cent., would be sufficient, but I have usually found the best results from singeing the proliferations with the galvano-cautery. This cauterization was never carried to the extent of destruction of the whole epithelial coating. As a result, the pale, bloodless, stringy epithelium would give place to a pinkish membrane of more healthful character.

One peculiarity of formation I have remarked in several instances, and in each case it was confined to the side affected by the more marked atrophy. This was the attachment by cicatricial band of the greater part of the inferior border of the middle turbinal, either to the upper part of the lower turbinal, or the external wall of the middle meatus. These special instances seemed in my mind to owe their origin without doubt to a previous hypertrophic condition. In the treatment of these cases I have, under cocaine, separated the attachment by galvano-cautery with marked advantage to the progress of the case.

Formerly, after thorough cleansing of the nares and pharyngeal vault, I would use one of the many stimulating sprays so freely vaunted for the treatment of atrophic rhinitis. I cannot say, however, that my patients derived any perceptible advantage from their use. It always seemed to me that the more you stimulated the shrunken, withered, pallid membrane, the less serum would be secreted, and the quicker would the surface dry. It must also be remembered that anything like successful treatment of atrophic rhinitis is a matter requiring years of careful and systematic management, and that the daily applications of stimulants for all this period could scarcely fail to have an injurious effect upon any mucous membrane.

For years now, I have usually as second treatment applied nothing but the blandest of simple hydro-carbons,—one of the many refined petroleum

extracts. At first I used petrolen, and latterly, as they came into the market, liquid albolen, a glycolen, or benzoinal. They are essentially bland and non-irritating, soothing to the mucous membrane, and protective from atmospheric influences. The best means of applying them is by means of any good atomizer capable of throwing an oil spray. In this matter atomizers differ materially: a large number of those in the market, while they will throw an aqueous solution with a satisfactory degree of atomization, have too small a bore to throw the hydro-carbons efficiently; hence I find that the best way to secure a good instrument is to test it with either albolen or glycolen before completing the purchase.

As I said before, the cure of atrophic rhinitis, when of long standing, if a positive cure can be accomplished at all, is always the result of prolonged and indefatigable attention. In cases of recent origin, however, before shrinkage had developed to any great extent, the incrustation being limited, and the odor slight, treatment has sometimes been productive of permanently good results. The pallor of the mucous membrane would be replaced by the normal pink color, the crust deposit would cease, and the odor disappear. This would be after office treatment lasting over a number of weeks, supplemented, as a rule, by the same line of home treatment for a more or less prolonged period.

The first case appended is an exception to this rule:

Case I.—In November, 1889, Mrs. B., aged sixty-five years, wife of a blacksmith, was referred to me by her physician for treatment. She had been suffering for several years from what she called "chronic catarrh" with "spitting of scabs." On examination I found offensive crusts in the posterior nares and naso-pharynx, with some pharyngitis sicca in the post-pharynx. After cleansing there was pallor of the mucous membrane and some shrinkage of posterior ends of the middle and inferior turbinal. After a few weeks' treatment, the tendency to crustation seemed to cease. The intervals between treatments became longer, and on the last of January, or ten weeks from the first consultation, she came to the office for the last time. In her case I prescribed no home treatment, as I was under the impression that she would not carry it out successfully. My instructions were to return for a treatment whenever the catarrhal symptoms gave her any trouble.

I did not hear of her again for more than four years, and my impression was that the disease had probably returned, and discouraged her about the efficacy of treatment. But in March, 1894, she came back with laryngeal disease, as a sequel of grippe, which she had suffered from during the winter. I was glad to find the nose and naso-pharynx in a perfectly healthy condition. The woman said that she had never been troubled with her catarrh since I last saw her. Under treatment she soon recovered from the mild attack of subacute laryngitis from which she was then suffering.

Case II.—In August, 1889, Miss N., aged twenty-two years, was referred to me by her physician. I found a large perforation of the cartilaginous septum. The middle and posterior nasal cavities and the vault of the pharynx were filled with foul greenish-gray crusts. The post-pharynx was dry and covered in its upper portion with similar incrustations. The palate was soft, flabby, and spongy, and the patient suffered from an irritable laryngeal cough. She remained under treatment at that time for a month, and on returning home faithfully followed out the directions

given her. Since then she has come to the city for treatment for a few days once or twice a year, and each time I have noted material improvement. Crusts now never form; dryness and odor rarely occur. The turbinated cushions are gradually filling up, and the discharges are more serous in their character. The cleansing sprays are still used, but far less frequently than formerly. The disease is now so completely under control that the closest observer without direct inspection would fail to detect its presence. To crown all, she has been so well both in health and spirits for the last year that she capped the climax by marrying only a few months ago.

Case III.—In June, 1890, Miss L. C., aged fourteen years, was sent to me for treatment. She had a definite history of purulent rhinitis extending back to infancy. There was no septal perforation, but the disease was of a severe character and the odor exceedingly offensive. She remained under treatment for a number of weeks, and on returning home to a distant village, carried with her explicit instructions for home treatment. These she faithfully followed out.

Last fall she came to the city to attend college. On examination, I found very great improvement, and I believe there is very fair prospect of ultimate recovery. One nasal passage has already resumed an apparently normal condition, and in the other the turbinated bones have lost much of their shrunken character. The chief difficulty was that she had not been able to thoroughly clear the pharyngeal vault. Since then I have had her use the post-nasal syringe. She can manage it very well, and will continue to use it as long as required.

Case IV.—In June, 1890, P. McD., aged twenty years, was referred to me by his physician. He had a history of purulent rhinitis from childhood. Towards adult age it had assumed the atrophic form, with foul breath, excessive crust-formation, and hoarseness. On examination, I found the characteristic nasal signs, but the usual atrophy of the faucial tonsils was not present. They were, instead, enlarged and spongy, while the uvula was thick and long. The young man was strongly built and athletic, and in great measure followed an out-door life.

Together with the regular nasal treatment, I removed a portion of the uvula, and reduced the tonsils by several cautery operations. For a while he followed out the home treatment prescribed, but desisted as the symptoms abated, contenting himself with occasional visits to my office at long intervals. Latterly there has been no nasal incrustation, the deposit being limited to the pharyngeal vault. This, he says, is expectorated about once a week and is gradually getting less. On last examination, a couple of weeks ago, the crust was smaller than ever, and I have good reason to believe that in another year or two the post-nasal pharynx, like the nasal cavities, will be entirely free from mucous accumulations and the patient will be cured.

The few brief histories I have given are extracted from a record of seventeen cases in private practice and are among the most successful that I have treated. I have purposely taken them from my earlier years of special work, as those of more recent date, being only in their infancy of treatment, would be unreliable so far as prognosis is concerned. My main object in dwelling upon them is to prove that great benefit can be obtained by persevering, painstaking treatment, carried out by the patient under the careful supervision of his physician. Atrophic rhinitis is one of the most loathsome and hopeless of diseases when allowed to take care of itself, and it is astonishingly prevalent; but, thanks to the method of treatment that medical science has placed at our disposal, it is in all instances capable of a definite measure of control. In a few cases I believe we are justified in

expecting a permanent cure; and although in the majority the outlook is less hopeful, yet there is no reason why sufferers should continue to be either a discomfort to themselves or a nuisance to others.

A CASE OF LEUCODERMA.

BY P. T. VAUGHAN, M.D.,

Assistant Physician, Alabama Insane Hospital, Tuskaloosa, Alabama.

THIS condition is a rare one, and is said to exist more frequently among negro races than among white races. If this be so, it ought to be encountered more frequently in the Southern States than in any other portion of the Union.

During a residence of some years in the South this is the first typical case that has come under my observation. The case is so marked that I deem it of sufficient interest to report it, accompanying it with a short *résumé* of literature upon the subject.

Vitiligo, leucoderma, or leucopathia is an acquired condition of the skin characterized by patches of white spots irregularly distributed over the body. The borders of the patches usually, though not always, show an increase in pigment deposit. The spots may be of various sizes, may spread by coalescing with each other, may remain stationary in size, or, the cause ceasing to operate, the condition may become regressive. The edges are not regular in outline.

The condition, as stated above, is a rare one, and is found more frequently among negroes than among whites. Its etiology is comparatively unknown. The factors most prominently associated with its causation are syphilis, heredity, traumatism, parasitic skin-disease, and disease of the nervous system.

Heredity and disease of the nervous system appear from a rational standpoint to be more probable causative agents than any of the other factors above enumerated.

Evidently the disease is atrophic in character, and is brought about by a failure of the elongate cells of the epidermal layer to properly perform their function. So little is really known concerning its etiology, and most of the theories advanced concerning its development are so improbable, that the greater number of them can safely be dismissed without serious consideration.

From the photograph it will be seen that the subject of this report has changed his color almost entirely.

The patient, H. H., male, colored, aged seventy, was admitted to the hospital May 12, 1893. He was born in Virginia, married, but is separated from his wife. He is five feet nine and a half inches tall, and weighs one hundred and fifty pounds. Eyes gray, hair gray. His mental disease is dementia with delusions.



He has always been a hard-drinking man. Physical examination shows a systolic roughness of heart-sound at apex, with aortic accentuation, and lungs to be normal. Urinary analysis reveals a trace of albumin and a few small hyaline casts. Reflexes, gait, sensation, and speech are normal.

Inspection shows him to be almost entirely white, —the pigment having been absorbed everywhere except in a few dark spots on his face, body, and limbs. The diseased area varies from white to a pale pink in color.

In some portions of the border, between the diseased and the non-diseased areas, there is an increased deposit of pigment, but this boundary layer of pigment-increase is not always present. The borders are irregular in outline. There is no difference in elevation of the surface, the diseased areas being on a level with the non-diseased areas. The sweat-glands and the sebaceous glands are normal in their action. There is no loss of pigment in the eyes.

It is much to be regretted that nothing can be learned concerning the ancestry or childhood of this man, and all attempts at gaining information from him have been, on account of his extreme dementia, futile.

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THE SURGERY OF FIBROID TUMORS OF THE UTERUS.[1]

BY H. W. LONGYEAR, M.D.,
Detroit, Michigan.

THE history of the surgery of myomatous tumors of the uterus has kept pace with that of abdominal surgery generally, although taking its initial impetus at a later date than that of ovariotomy. Ovariotomy was a well-established operation, as you all know, more than twenty-one years ago, but the operation of hysterectomy for myoma was not then considered justifiable. As illustrating this point, I quote from "Erichsen's Surgery," published in 1873, as follows: "These tumors seldom occur before the age of thirty or forty, and are not very amenable to treatment. In some cases, however, considerable benefit results from attention to position, the occasional application of leeches to the cervix, so as to lessen the congestion of the organ, and the introduction into the vagina every night of a ball composed of equal parts of strong mercurial ointment, wax, and lard, with a view of acting as an absorbent on the morbid tissue." In the same year that this operation was published, M. Péan, the celebrated surgeon of Paris, published some statistics, and warmly advocated the amputation of the supravaginal portion of the uterus. He collected forty-four cases, of which fourteen recovered and thirty died. Dr. Thomas, in his "Diseases of Women," published in 1880, gives the statistics of three hundred and sixty-five cases, by thirteen operators, with one hundred and thirteen recoveries and two hundred and fifty-two deaths,—a mortality of nearly seventy per cent. Statistics continued to show about this fearful mortality until the discovery of certain principles of technique and the practice of aseptic surgery caused it to decrease rapidly. Péan can be said to have really placed the operation on a solid foundation. His method was unique and laborious, and had for its prime object the control of hemorrhage. The presenting part of the tumor, after exposure by abdominal incision, was grasped and as much of it as possible transfixed and ligated with wires, and then removed. Another portion was then treated in like manner, and so on until the stump was reached, which was fastened with wires to the abdominal wound. This was the first successful method used looking towards the control of hemorrhage, and it gave a great impetus to the operation. Schroeder afterwards operated, and at the suggestion of A. Martin controlled the hemorrhage by encircling the cervical portion with rubber tubing. Two more factors were necessary to produce the nearly

[1] Read before the Michigan State Medical Society, May, 1894.

perfect results that obtain to-day. The first was given to the profession by Keith, whose phenomenal success in this branch of abdominal surgery was not understood by the profession until the cause was revealed in his method of technique in the formation of the pedicle. Before this was known those cases having no apparent cervix below the tumor were considered inoperable, or usually proved fatal because of inability to get a pedicle that could be treated extra-peritoneally. The last factor was asepsis in surgery, of which Lister's antiseptic methods were the forerunners.

I make this brief mention of these three mile-posts in the early history of my subject, not only to give due honor to the authors, but to impress on the mind of the surgeon, who would aspire to success in this work, the fact that his success will depend almost entirely on his understanding of these three methods of technique.

In the treatment of my subject I shall not attempt to specify the many different methods advocated by various authorities, but shall confine myself to those that through personal experience and observation have commended themselves to my judgment as being equal or superior to others. Believing, with Tait, that the pathology of the soft, œdematous myoma is different from that of the hard, multinodular tumor, I shall make a point of this difference in the methods used for their respective treatment.

Treatment will best be considered under two heads:

1. Submucous fibroid tumors and fibroid polypi.
2. Interstitial or subperitoneal fibroid tumors.

There is no question regarding the propriety of removal by the vagina of tumors of the submucous variety when they are pedunculated. The soft fibroid, which always occurs single and is easily removed from its capsule, may under favorable circumstances be removed in this way. The removal in this manner of hard, multinodular fibroid tumors that are not pedunculated is extremely difficult surgery, and is usually more dangerous to the life of the patient than either of the operations of oöphorectomy, vaginal or abdominal hysterectomy, one of which operations should usually be preferably selected in the treatment of these cases.

The technique for the removal of submucous soft myomata is as follows: The uterine cavity and vaginal canal are first thoroughly disinfected by the use of a solution of either corrosive sublimate, carbolic acid, or creolin, and the cervix is dilated. If the tumor be not large and the cervix be soft and patulous, this can be accomplished in half an hour with the Goodell dilator, and the further steps of the operation can immediately follow. If, however, the cervix is hard and long, with a narrow os, it may be best to dilate more slowly, using tents, followed by Barnes's rubber bags. When sufficient dilatation has been attained, the cervix is grasped with double tenaculi and drawn down as far as it will readily come, the index finger introduced, and when the most prominent part of the tumor is located, the scissors or the bistoury is passed in and the capsule incised sufficiently to admit the finger, which then tears it towards both extremities of the tumor,

which can often be readily dislocated with the finger assisted by traction on the tumor with the vulsellum. A periosteum elevator will be found to be a useful instrument to assist the finger in dislodging the tumor. The spoon saw, which is advocated by some authorities for this purpose, is a dangerous instrument, as it is liable to perforate the peritoneal covering of the uterus and enter the abdominal cavity. The cavity resulting from the removal of the tumor should be packed with iodoform gauze, using long strips with the outer ends projecting from the os, so as to facilitate their removal. The packing should be renewed every third day until the cavity contracts.

These soft tumors occasionally burst their capsules when they are expelled by the contraction of the uterus. I had one case terminate in this manner, the history of which is, briefly, as follows:

Mrs. L., aged thirty-six, mother of three children, consulted me in April, 1887, complaining of severe menorrhagia. Examination revealed the presence of a small tumor situated in the anterior wall of the uterus. Uterine cavity measured three and three-quarters inches. As the growth was not nodular, but smooth, and seemed more like a great thickening of the uterine wall, I diagnosed it to be a soft myoma. Besides other symptomatic treatment, the patient was put on ergot, and took it pretty constantly until May, 1888, when menstruation ceased as the result of pregnancy, and the drug was discontinued. The case progressed without untoward symptoms until nearly the end of the sixth month, when labor pains suddenly came on, and in a very short time, before I could reach her, the fœtus and after-birth were rapidly expelled with great force. The uterus contracted well and everything seemed normal until the tenth day, when labor pains began and continued with great violence and with very short intervals for forty hours, when a soft, fleshy mass presented at the dilated os uteri. The patient was placed in the lithotomy position, and the presenting part of the tumor grasped with vulsellum forceps and pulled down. Finding it still fast to the uterus, the index finger was passed and its attachments discovered and broken up, when the mass was easily delivered. Its weight was twelve ounces; shape, oblong and irregular; color, dark purple-red. It had no resemblance whatever to the fibrous structure of the hard myoma, but resembled more a piece of muscular tissue that had been swelled and made œdematous by inflammatory action. The patient was treated antiseptically, but, notwithstanding, she had a long course of septic fever accompanied by a very severe phlegmasia of the left leg. She ultimately made a good recovery, and is now quite well, with no sign of a recurrence of the tumor. She tells me that she flows about half as much as she did before the expulsion of the tumor.

The diagnosis of the pedunculated, hard myoma, when entirely within the uterus, can only be made after dilatation of the cervix. Removal is easily accomplished either by the use of the écraseur, or by incising the capsule and shelling out the tumor, and afterwards trimming away the redundancy of the capsule. In using the écraseur, traction should not be made on the tumor while the instrument is cutting its way through the pedicle, as there is danger of drawing down the uterine wall at the seat of attachment of the tumor in such a manner as to cause it to be caught in the grasp of the loop of the instrument, and the peritoneal cavity entered. These pedunculated fibroids are usually multiple, a number being contained in the

capsule, so that on opening their investment they are easily shelled out. This method is safer than that of the use of the écraseur, and should be resorted to in preference where possible. When the tumor has already been expelled from the uterus, the pedicle can be more safely divided, but the same precaution should be observed, as the attachment may be in one horn of the uterus, and that portion be pulled down so as to form a partial inversion.

The diagnosis of this condition is often puzzling, as the projecting part is liable to be mistaken for that of an inverted uterus, which it may very closely resemble. About three years ago I had such a case, in which the diagnosis was only possible after the patient was anæsthetized. The uterine body could not be positively distinguished, and the diagnosis was made by the fact that the sound could be passed about an inch beyond the cervical ring on one side. The patient had already been under treatment for several months by another physician, who, feeling certain that he was dealing with a case of inversion, had made every effort during this time to force the tumor back through the cervix, which was tightly contracted around the pedicle. In this instance I opened the investing capsule with my finger and easily shelled out the contents, which comprised about a dozen small fibroids, then with the écraseur I cut away the thick pedicle, which arose from the left side of the uterus just above the inner os. When the tumor is interstitial or subperitoneal and the usual temporizing treatment has been tried, and because either of pressure symptoms, the increasing size of the tumor, or the fact that frequent hemorrhages are threatening the life of the patient, the radical surgical treatment of the tumor has to be considered. The method of removal through the dilated os, by enucleation, I will not consider, except to condemn it as a dangerous and unjustifiable operation.

Of late years much has been claimed for the use of electricity in the treatment of uterine fibroids. Apostoli, in France, first systematically used and advocated it, and during the last eight or ten years it has been very thoroughly tested by many operators of well-known scientific attainments, both in this country and in Europe. It seemed to bid fair at one time to take the place of more radical and seemingly more dangerous operations, and was hailed with delight by the profession. These hopes, however, have hardly been realized, as statistics published, besides the experience of many silent experimenters, indicate that its range of usefulness is much more limited than the first reports indicated. Its power to cause absorption of the tumor is very uncertain, having no effect in some cases, while in others it causes a shrinkage of the tumor during its use only, the beneficial results ceasing with the cessation of the treatment. The use of the needles often causes dangerous abscesses, besides local peritoneal inflammations with resulting adhesions, which add so much to the dangers in those cases that ultimately come to operation by cœliotomy. It can be successfully used for the attendant hemorrhage, and for that purpose I can enthusiastically commend it. I have had very gratifying results in these cases from the appli-

cation of a strong galvanic current, of from one hundred and fifty to two hundred milliampères, to the uterine endometrium, for from five to seven minutes, using a platinum electrode and positive pole internally, and a large wet asbestos pad with negative pole on the abdomen. Beyond this point, I believe, the usefulness of the electric current will not pass, because of the uncertainty of its action combined with dangers fully as great, if not greater, than the more radical operations, which have the merit of giving speedier results and curing more patients.

Removal of the uterine appendages has been found to arrest the growth of the hard, multinodular myoma in the majority of cases, and this is the operation to be selected in cases of tumors of moderate size,—say in those not reaching above the umbilicus. In cases of tumors of large size it is usually all but impossible to find the ovaries, and in these cases, too, the weight of the tumor would probably demand removal. The operation is also contra-indicated in large tumors because of the danger of œdema and death of the tumor resulting from the cutting off of the venous circulation. The growth of the soft, œdematous myoma is not arrested by the removal of the appendages. In those cases where the statistics show that the growth of the tumor has not been arrested, I have no doubt that they were, every one, of the soft variety. The operation for the removal of the appendages is one of the safest in abdominal surgery, and should be resorted to early in cases requiring it. It should also be the operation of selection in preference to hysterectomy, where possible, not alone because the mortality statistics are in its favor, but because the patient is mutilated less and is less liable to have hernia follow. I should recommend it in all cases of rapidly-growing, multinodular myomata of moderate size, and those attended with dangerous hemorrhage, occurring in women who have yet several years before the menopause. Profound anæmia should cause the selection of this operation rather than that of hysterectomy, where possible. In those cases which are near the climacteric, temporizing means, such as curetting and electro-cautery, can be resorted to for a time, as many of them can be tided over in this way until the change has occurred, and operation avoided. In our treatment of these cases we should not lose sight of the fact that these tumors which seem benign are occasionally found to be malignant, so that in cases where temporizing treatment seems best it is highly important that malignant disease should be excluded. Another important point in the pathology that should govern our treatment is the fact that in nearly all cases of uterine myomata the appendages are found to be the seat of serious chronic disease, which itself would demand their removal. Whether the presence of an irritation of the adnexa, in the shape of chronic interstitial salpingitis, pyosalpinx, ovaritis, etc., can be an etiologic factor in the causation of myoma, is yet a mooted question, but my own experience, in finding the two pathological conditions so often associated, leads me to the belief that the diseased tubes and ovaries must be considered often as the primary cause of myoma. This condition adds

another argument for the early removal of the appendages for the cure of these cases. In cases of myoma with abdominal evolution, the kind of operation should be definitely decided on only after the abdominal cavity has been opened and a careful examination of the tumor and its surroundings made. A small tumor might be found to contain a suppurating cyst, when the operation of hysterectomy should be done instead of that of oöphorectomy. A pedunculated tumor might be found whose removal could be accomplished and the genital organs left intact, if otherwise healthy. When the tumor is pedunculated its removal is comparatively simple. The pedicle, if small, can be transfixed and ligated with the ordinary double-knotted ligature and the tumor cut away. With a pedicle of medium size I prefer my method of partial double ligation, and after excision of the tumor, sewing together the peritoneal flaps, which should be calculated for in cutting away the tumor. I used the kangaroo-tail tendon material for all ligatures and buried sutures. In cases of very large pedicle, the rubber cord should first be passed and secured around the lower segment of the uterus, to control hemorrhage, then the tumor is to be cut away, leaving ample flaps of peritoneum, and the wound closed, after tying any large blood-vessels that may be seen, by means first of deep-buried sutures, and then superficial sutures approximating the peritoneal edges of the flaps. After removal of the rubber cord, if oozing occurs, place a deep stitch at each point. After the oozing has entirely ceased the abdominal cavity may be sponged out and the abdominal incision closed with the buried suture. If the tumor is sessile, and not too large, it may be enucleated and the cavity closed, using the same method of hæmostatics and suturing as just mentioned. When a very large cavity results, Martin recommends drainage through the cervix and vagina. A small tumor situated in the folds of the broad ligament may be treated in the same manner, but if very large, the cavity should be drained into the vagina, and the incised peritoneal margins closed with a fine continuous suture.

In the foregoing I have endeavored to consider briefly, and without going into minute details,—which would be out of place in a paper of this kind,—the conditions of uterine myoma that may be relieved by operation less radical, and less dangerous to the life of the patient, than that of partial or total removal of the uterus with the tumor. The subject of hysterectomy is one that could profitably furnish material for a paper of many times the scope of this, so that to fit the subject to this short paper I shall be obliged to give only the salient points, omitting all duplication of details of operative technique.

The preference of surgeons has divided the operation of abdominal hysterectomy into two methods; the first, where the pedicle is treated exterior to the peritoneum, and the second, where it is dropped back into the peritoneal cavity. The second method includes both the supravaginal amputation of the uterus at the cervical junction and the total extirpation of the organ. Carefully-prepared statistics of the two methods give the

extra-peritoneal method slightly the advantage as regards death-rate. Unfortunately, there are no statistics giving a comparison of ultimate results,—such as hernia, etc. The wedging apart of the fascia, in the abdominal wound, by the large mass composing the pedicle, causes a weak spot in the abdominal wall, and is very liable to subject the patient to the accident of hernia with its many dangers and discomforts, and the necessity of another abdominal section for its cure. On the other hand, the intra-peritoneal method allows of the perfect closure of the incision and so renders this accident very much less liable to occur. The danger from sepsis is rather in favor of the first method, especially if in the second the cervix is left. Of the two methods that by external treatment is much the easier for the beginner, especially with a long pedicle that can be readily drawn out and clamped. The intra-peritoneal method appeals to the mind of the scientific surgeon as an ideal operation, and is doubtless the operation of the future. Surgery that leaves a sloughing mass on the patient's abdomen, and then a granulating cavity that one can almost put a fist into, certainly does not appeal to one's idea of perfect, aseptic, nineteenth-century surgery. It is one of the crudities of the past, and must in time give way before the tendency of the day to mechanically exact surgery, with its buried animal sutures and absolute asepsis. The operation, however, is performed almost exclusively by some of our best abdominal surgeons. When asked why they do not use the intra-peritoneal method, they usually answer that their success has been so good with the other that they dread any change. The true surgeon will select the method of operation according to the indications of each case, and this decision is best made, positively, only when the abdomen is opened and the tumor and its surroundings are carefully examined. In cases of tumors of moderate size that have grown rapidly, the ligaments being short and stretched tightly, their removal will be much better accomplished by the intra-peritoneal method. Large tumors, generally of the multinodular variety and of slow growth, can usually be easily removed by the extra-peritoneal method, as the ligaments and vagina have become lengthened with the slow growth of the tumor, and will permit of the use of the clamp without undue strain.

The technique of the extra-peritoneal method is as follows: After the preparation of the patient in the usual manner for abdominal section, an incision is made through the abdominal wall, in the median line, of sufficient length to admit of the passage of the tumor. The tumor is then raised and brought outside the abdominal cavity, preferably with the assistance of the Tait corkscrew if the myoma be of the hard variety. In cases of large multinodular tumors this is often a difficult proceeding, as the nodules may dip into the various fossæ of the cavity where they have grown, and seem to be solid with the pelvis itself, requiring patience and care in safely working them out. Adhesions to the intestines should be carefully separated; if old and organized, flaps of the peritoneal covering of the tumor should be made and then the adhesion dissected off and the

bare spot on the bowel covered with them, using fine tendon sutures for the purpose,—or fine silk with a cambric needle may be used. The tumor is now drawn well forward, and if the length and elasticity of the broad ligaments will permit, the hæmostatic agent, in the shape of the solid rubber cord, or Kœberlé's *serre-nœud*, can be passed around the cervical portion, tightened, and made fast,—care being taken not to include any portion of the bladder or intestine. Two contingencies are to be here considered,—viz.: 1, short and inelastic broad ligaments; 2, lack of cervix, owing to the growth of the tumor into it. The first is met by ligating each ligament in sections below the appendages, and cutting them through to their junction with the cervix. The ligatures should be of heavy tendon and passed with a long-handled, hook-shaped, dull needle, and cut short when tied, leaving a good button to prevent slipping. After the incision of the ligaments in this manner, the cord or nœud can be easily applied. The lack of cervix, owing to the progress of the tumor into it, was the *bête noire* of the early operators, and many poor women have lost their lives because their surgeons lacked the requisite knowledge and skill to encompass the difficulty. The honor of the discovery of the simple method by which the pedicle is made under these circumstances is due to the elder Keith. The method is as follows: After encircling the cervical portion and the lower part of the tumor as low as possible, now using the rubber cord very tightly drawn and made fast, the uterine walls covering the tumor are incised an inch and a half or more above the ligature around the whole mass, the cut passing down to the fibrous substance of the growth, which is then pulled out or enucleated with the finger from the cervical portion, the elastic ligature following up and constricting the cervix as it is drawn out. In case the nœud is used an assistant must tighten it as the operation proceeds. A pedicle can thus be made under the most seemingly adverse conditions. Thus it is that the absence of the cervix, from which the pedicle must be made, does not now work against the patient in this operation. After cutting away the tumor, the abdomen should be closed in the following manner: The stump being held in the lower angle of the wound with the vulsellum, the edges of the peritoneum are made fast to the peritoneum covering the pedicle a little below the ligature, until the pedicle is completely encircled, using the continuous suture and a fine tendon threaded in a fully-curved, round needle. The suture is then made fast, and the sewing continued in the upper part of the wound until the peritoneal opening is completely closed. This effectually shuts off the abdominal cavity from any possibility of contagion entering through the wound. The edges of the fascia are then brought together from above downward, using the same stitch and a heavy tendon for the purpose, and bringing the surfaces together closely about the pedicle. The adipose layer and skin are each in turn closed with the buried lacing stitch. When the buried method of suturing is not used, silkworm-gut is the best suture material, and the *en masse* stitch applied, care being taken to sew the pedicle securely in the

lower angle of the wound with peritoneal surfaces closely approximated. The stump is now transfixed with two strong hysterectomy needles just above the ligature, which serve both to keep the ligature in place and to prevent the stump from sinking back into the abdomen. The ends of the needles, besides their protectors, should rest on iodoform-gauze pads to prevent irritation of the skin. The stump is then trimmed of all unnecessary tissue, and, with the wound around it, freely dusted with iodoform and powdered boric acid; dry pads of bichloride gauze packed around and over everything, and a thick layer of sterilized cotton, with the binder, complete the operation. If no complications occur, the after-treatment for the first nine or ten days is similar to that of any abdominal section. At the end of this time the dressings are removed and the parts dressed according to indications. If the stump and surroundings are dry, more powder and the same dressings are applied; if moisture indicates suppuration, the parts are bathed thoroughly twice daily with the peroxide of hydrogen. The stump, with ligature and pins, usually falls off in from two to three weeks after operation, leaving a deep, funnel-shaped, granulating cavity, which should be bathed twice daily with the peroxide solution and lightly filled with iodoform gauze until healed. Occasionally the granulating surface needs stimulating with a sulphate of zinc solution. To prevent hernia the patient should ever afterwards wear a well-fitting bandage.

The technique of the intra-peritoneal method is not so difficult as its description would indicate. After the tumor is lifted out of its bed and delivered through the abdominal wound the ligation of the broad ligaments is immediately begun. For this purpose I have found the dull, hook-shaped needle, threaded with a loop of silk as a carrier, a very useful and safe instrument. Each side is usually ligated in three sections, although the number of ligatures used should depend on the bulk of tissues to be included, using more or less as found necessary. It is my custom to use my system of partial double ligation, placing each suture in such a manner that it shall also include about a quarter of the tissue included in the previous one, although not coming in contact with it. In this manner the bleeding of all vessels is controlled, and yet enough capillary circulation is allowed to prevent the stump from sloughing. The kangaroo-tail tendon is the best material for the purpose, heavy reliable strands being selected. The first ligature is placed outside the ovary, the needle being passed about a third of the distance from the top of the ligament and well away from the tumor, so as to leave plenty of tissue for the button after the parts are divided. After tying, forceps are placed on the corresponding part of the ligament next the uterus, and this section divided with scissors. When the opposite side has been treated in like manner the tumor will be found to be much more free, and can be easily raised, making the placing of the second ligature a much simpler task than it previously appeared. The tissues are divided here in like manner, and the mass raised still farther out. The third ligature is now placed, inserting it as near to the vaginal wall as

possible, as it is to control the uterine artery. In case an amputation is to be made, leaving the cervical portion as the stump, flaps can now be made anteriorly and posteriorly, taking care to begin well up above the bladder in front, so as not to move that organ, and the cervix cut through and the tumor removed. The cervical opening should be cauterized with pure carbolic acid and the flaps brought together with a continuous suture. All traction should now be removed and hemorrhage looked for, which if noted, can be controlled by one or more deep stitches. Drainage is not usually necessary, and the closure of the abdominal wound by the buried method can complete the operation. Where drainage seems necessary it should be accomplished by means of a rubber tube placed in the posterior *cul-de-sac.* This is easily done by first forcing the jaws of rather sharp-pointed forceps through from the vaginal side against an opposing finger placed against the peritoneal surface, and grasping and pulling through the tube. To prevent the tube slipping out a cross-piece should be sewed to its upper end. The tube is left in until all discharge has ceased. Its external end is kept enveloped in borated or sublimated cotton, which is changed as often as it is necessary to keep it dry.

In case it is desired to make a complete extirpation the steps of the operation are the same until the cervix is reached. After placing the last ligature on the broad ligament the same flaps of peritoneum are made, and anteriorly the bladder is carefully dissected away from the uterine wall down to the junction of the vagina and cervix. This landmark is readily found by an assistant placing a finger in the vagina and carrying it up to the point you seek. When the cervix is denuded of peritoneum down to this junction all around, the circular incision freeing the cervix is started by picking up a fold in the *cul-de-sac,* close to the cervix, and cutting through with the scissors; then, with the finger through this opening as a guide, the balance of the circle is easily cut. The peritoneal flaps are then brought together by a continuous suture, and the abdominal wound closed as before described. No drainage should ever be necessary.

The operation last described, that of total extirpation, leaving no nidus for infection, allowing always of complete closure of the abdominal cavity, and the use of the buried animal suture and ligature, seems to be the ideal operation, and evidently it is the method that the future will perfect and place the seal of perfection upon.

CLINICAL LECTURES.

SYMPTOMATOLOGY AND TREATMENT OF CHLOROSIS.[1]

A CLINICAL LECTURE DELIVERED AT THE CHARITY HOSPITAL.

BY PROFESSOR JACCOUD,

Member of the Paris Academy of Medicine; Professor of Clinical Medicine, Paris Faculty; Physician to the Charity Hospital, Paris.

GENTLEMEN,—The woman that we have just examined with care is thirty-three years of age, and she is extremely robust; without the slightest doubt she would not have fallen ill if she had stayed in her native village instead of coming to Paris. She has been a servant here for several years and has had to work very hard, rubbing the floors and attending to the kitchen furnace; besides this labor, she has not been well nourished. I may tell you at once that you will find any number of patients who have chlorosis among this class of people, so do not think that the malady is one of young, feeble, and well-to-do girls. Another cause of chlorosis in such persons is that they are often made to sleep in very small rooms close to the kitchen or else at the top of the house. Our present patient resisted these difficulties for some time, but finally she lost strength and commenced to have palpitation of the heart and shortness of breath; later she lost her appetite, and two weeks before she came to the hospital she found that her legs were swollen. This œdema is quite frequent in such cases, notwithstanding that the heart is in good condition and there is not a trace of albumin in the urine. The reason for it is that these servants are constantly employed in polishing the floors; and they do this by rubbing them with a brush, carrying a solution of wax, which is attached to the foot.

This swelling has persisted for a long time, although she was put to bed here in the hope that by perfect repose she would recover. I need hardly tell you that your duty in similar cases is to be sure that the heart and also the urine are in good condition. The symptoms in our present patient may be briefly stated as follows: Loss of strength, paleness of the tissues, loss of appetite, shortness of breath on the slightest exertion, palpitation of the heart, but no digestive trouble or uterine difficulty, which are so

[1] Translated by Thomas Linn, M.D., of Nice, France, by special arrangement with the author.

frequent in chlorosis,—so that the full number of symptoms are not seen in this patient. The discoloration is very marked, the skin has a pale-yellow, almost greenish tint; indeed, looks like the color seen in a person with the cancerous cachexia. We examined for this, but nothing of the kind exists in her case. We even thought of Addison's disease, but could not regard it as admissible here. With such an intense chlorosis you would expect to find some abnormal heart-sounds, and you are able to hear the systolic murmur which she has at each of the four valves of the heart.

I will not stop here to tell you that the old ideas of the heart-sounds are incorrect, but will simply say that the cardiac souffle or murmur in chlorosis is not necessarily aortic, tricuspid, pulmonary, or anything else; it is often in fact a mitral souffle. In grave chlorosis you will, indeed, find constantly four systolic souffles, and if you will examine the conditions as to rhythm, intensity, and tone, you will find that it is by no means a diffusion of sound from one large souffle, but that there is actually a murmur at each one of the heart's orifices. The most intense one in our patient has its seat about the level of the pulmonary artery. The maximum sound of a souffle of this artery can occupy two different foci; one, an inferior one, has its seat in the second intercostal space of the left side,—just at the articulation of the third cartilage of the left side with the sternum is the exact spot where you will hear it. This is at the orifice of the pulmonary artery. A little outside of this, not more than an inch, you will get a second sound which is in the artery itself and not at its orifice. It denotes a functional alteration above the infundibulum, while the first souffle is symptomatic of an alteration just at the origin of the artery. In our patient we hear the maximum sound in the inferior focus, and the more you go from the sternum the more the sound diminishes.

We have here also a detail that I must dwell upon,—that is, that this pulmonary souffle is not a pure one. At first it seems a grating sound, but listening further you find it is not so, but that it is a rubbing, systolic sound. You will find this same stethoscopic phenomenon in dry pericarditis. I have not had the opportunity to see the anatomical state of the tissues where these murmurs are heard, but I know that we may have a limited rubbing sound of the pericardium without a pericarditis. This phenomenon may be produced in two quite different conditions: first, from an excessive dryness of the tissues, as has been seen in great loss of water in cholera, and, secondly, partial rubbing sounds are heard in myocarditis. These conditions, however, do not apply to our patient. Has she had a dryness of the pericardium? I do not know. Remember that a dilatation of the right heart is common in chlorosis; I cannot give you the anatomical reason for it, but it exists. All these phenomena will disappear if the case is cured.

The important fact here is not the number of red blood-cells, as perhaps many of you may think; the capital phenomenon of chlorosis is the amount of the hæmoglobin present. In chlorosis there is no regular

proportion between the diminution of the red globules and that of hæmoglobin,—that is, there is no regular parallel between them, and they do not follow one another. We may have hæmoglobin in large quantity and the red blood-cells in small number, or the reverse. Everybody knows that the alteration produced by chlorosis is the diminution of hæmoglobin, but what is not well enough known is that this has nothing to do with the number of red blood-corpuscles. I must repeat that these two facts have nothing in common.

In woman the mean number of red globules is 4,500,000 per cubic millimetre, and the proportion of hæmoglobin is fourteen per cent. by weight. In 1886 I showed a patient who had 1,850,000 red blood-cells to 2.75 per cent. of hæmoglobin. The red blood-corpuscles, then, were forty-one per cent. of the normal, and if the alteration of the hæmoglobin was parallel with the globules, it should have been 5.74 per cent. instead of 2.75. Our present patient when she came in had 2,200,000 red globules and 5.50 per cent. of hæmoglobin. She therefore had more than double the quantity of hæmoglobin in the case cited above, and more red blood-cells, and by the same calculation she should have had 6.84 per cent of hæmoglobin. After the improvement of her health this patient to-day has 3,800,000 red blood-cells per cubic millimetre, and the hæmoglobin is now 7.50 per cent. You see, then, that the increase in the number of globules has been more considerable than that of the hæmoglobin, for the proportion should have been, if regular, 11.82 per cent. The number of red blood-corpuscles does not, therefore, give the exact measure of the state of health of the blood.

I am insisting upon this point so that you will understand the inevitable contradictions in the reports of such cases, in which may be found only a slight diminution of red blood-cells and yet quite a serious case. What the patients suffering from chlorosis want is not so much a larger number of red blood-cells as more hæmoglobin,—that is to say, iron and oxygen. This will put you at once in the proper way to treat them. *From the very first* give them inhalations of oxygen gas, and iron. Let the patient absorb, every day, by inhalation, at least thirty litres of oxygen gas. As regards the iron, use those products that have been made with an organic acid: the tartrate, the citrate, and the new protoxalate. The first may be given in pills or powder, or in solutions; the dose should be forty centigrammes each day. The protoxalate may be given in powder in the same quantity. The dose should be divided into two parts, one to be given in the middle of each of the important meals of the day.

In a large number of cases you will find an intolerance for iron, no matter what preparation you use. This will be stomachal or intestinal, and mostly in nervous subjects and at the commencement of treatment. In these cases you must not insist upon your therapeutics, but if the iron will not answer, replace it by arsenic.

REVIEW OF MEDICINE.

MEDICINE.

IN CHARGE OF JUDSON DALAND, M.D.,

Instructor in Clinical Medicine and Lecturer on Physical Diagnosis in the University of Pennsylvania; Assistant Physician to the University Hospital; Physician to the Philadelphia Hospital and to the Rush Hospital for Consumptives; Fellow of the College of Physicians of Philadelphia.

The Birth and Significance of Blood-Plaques. (Ueber die Herkunft und Bedeutung der Blutplättchen. *Centralblatt für die medicinischen Wissenschaften*, May 19, 1894.) By Dr. Ludwig Bremer.

The author has made a series of examinations to determine the question of the birth and significance of the blood-plaque. In staining the blood, the preparation was first heated to 120° C., and then dipped in a watery solution of eosin-methyl-blue. His conclusions are as follows:

1. Bizzozero's blood-plaques are decomposition products of the red blood-corpuscles, and are not a third corpuscle, as believed by Bizzozero, nor a hæmatoblast, as was the opinion of Hayem.

2. In normal, and sometimes when there is rapid destruction of blood, as in certain forms of neurasthenia, one can see the blood-plaques, either singly or in chains, flowing out of the blood-disks, and occasionally they are pushed out. In stained preparations one sees plainly the blue-colored blood-plaque, and the opening in the red blood-corpuscle through which it has place. Sometimes one or two blood-plaques may be seen in the interior of the red blood-corpuscle.

3. When blood is taken from the individual, many of the blood-plaques which may be seen, singly or in masses, probably existed as free bodies in the blood.

4. In many of the colored blood-plaques, more especially in the central area, a very small, colorless, ball-shaped appearance is noted. In large masses these balls are larger from the flowing together of smaller bodies. The author considers these as side products due to the destruction of the red blood-corpuscle.

5. The white blood-corpuscles have nothing to do with the forming of the blood-plaques, and they are never seen in connection with the destruction of the leuco- or lymphocytes.

6. No blood-plaques occur in the blood of birds, more particularly that of chickens, which was especially studied.

7. The so-called elementary body he believes identical with the above-

mentioned bodies centrally placed in the blood-plaques. The leuco- and lymphocytes sometimes contain necrotic ball-shaped masses. The blood-plaques are amphophile and neutrophile.

Reflex Cough due to Ear-Disease. (*Journal des Sciences médicales de Lille*, April 21, 1894.) By H. Lavrand.

The author calls attention to the fact that in many patients affected with ear-disease a blunt hook, curette, or speculum, when introduced into the internal auditory meatus, provokes cough, which disappears when the instrument is withdrawn. He has obtained this reflex in twenty-one per cent. of all the patients that he has examined. He states that at times, from disease of the auditory canal, the cough occasionally becomes very distressing and persistent. He cites a case reported by Percy Jakins in which there were all the signs of beginning tuberculosis, such as cough, exhaustion, night-sweats, occasional delirium, and mucous râles throughout the chest. Both meatuses were plugged up with accumulations of wax, and, when these were removed, the pulmonary symptoms abated. The reflex cough is explained by the anatomical fact that the auricular branch of the pneumogastric has its origin in the jugular ganglion, or is given off from the trunk of the pneumogastric immediately below that situation, and proceeds by way of the jugular fossa and the Fallopian canal to the posterior part of the external auditory canal. Observation has shown that this cough is produced only by irritation of the postero-inferior wall of the canal near the tympanum, and the reason that all do not suffer with auricular reflex cough when disease is present may be in part due to an anomaly of innervation in that particular individual. The author finds no relation existing between the more or less nervous condition of the patient and the occurrence of this reflex. The cough which is produced has no distinct characteristics; sometimes it is paroxysmal, resembling that of whooping-cough; sometimes explosive, short, harsh, and barking, and, unless there is catarrh of the passages, it is not accompanied by expectoration.—*New York Medical Journal*, June 9, 1894.

Tests for Bile Pigment in the Urine. (Ueber den Nachweis von Gallenforbstoffen in Harn.) *Zeitschrift f. Physiologie Chem.*, vol. xviii. p. 545.) By A. Jolles.

This author has made a very interesting study of the sensitiveness of the different tests that have been recommended for the detection of the coloring matter of bile in urine. He used ox-gall in solutions varying from ten to one-half per cent. with the following results:

Gmelin's test or the modification by Brüke and Fleischs is not very sensitive, and it recognizes with certainty no quantity less than a four-per-cent. solution. Huppert's test, and another acting upon the same principle suggested by Hoppe-Seyler and Hilger, detect with certainty the coloring matter of bile amounting to not less than two per cent., as does also Rosin's

modification of Smith's test, which consists in overlying the urine with a one-per-cent. solution of tincture of iodine. The test that will detect a two-tenths-per-cent. solution of the coloring matter of gall, and the one recommended by the author, is as follows:

In a cylinder place fifty cubic centimetres of urine; one drop of hydrochloric acid, chloride of barium in excess, and shake the mixture with five cubic centimetres of chloroform; at the expiration of ten minutes draw off the liquid above the chloroform; the chloroform may then be heated over a water-bath up to 80° F.; to the yellow-colored precipitate add three drops of sulphuretted sulphuric acid which contains one quarter its volume of fuming sulphuric acid, and at the bottom of the glass one obtains the characteristic colored rings. When one hundred cubic centimetres of urine are employed, it is possible to determine one-tenth of one per cent. of bile pigment.—*Centralblatt für die med. Wiss.*, May 19, 1894.

The Importance of Early Recognition and Treatment of Obstructive Diseases of the Upper Respiratory Tract. (*Journal of the American Medical Association*, May 12, 1894.) By Joseph S. Gibb, M.D.

This important subject is well treated by the author, and after a brief description of the more useful anatomical and physiological truths connected with the nasal chambers, the writer points out in a very clear manner the evil effects produced by obstructive diseases of the upper respiratory tract upon the bronchi, lungs, and general health of the individual. The statement that seven thousand grains of water, or nearly a pint, are expired from the lungs in twenty-four hours, and that most of this comes from the mucous membrane, is an important truth not generally known. One can well understand the manner in which the inspiration of air into air-vesicles imperfectly warmed or deprived of moisture would exercise a deleterious effect upon the mucous membrane of the alveoli, and the author has observed many children where nasal or pharyngeal obstruction has prepared the patient for attacks of acute bronchitis and obstruction of general nutrition.

In conclusion, the author calls attention to the following points:

1. The importance and desirability of early attention to diseases of the upper respiratory tract, consisting of the nose and naso-pharynx.

2. The production of alteration in the nutrition and possibly pulmonary and bronchial troubles by hypertrophic conditions of the upper respiratory tract.

3. The etiology of these states referring to the influence of environment and especial mention of diphtheria and the exanthemata as prominent factors in this category.

4. The prevalence of these conditions.

5. Carelessness and indifference in both physician and patient as to the various catarrhal states which are believed to be the precursors of the disease under consideration.

6. The necessity of early treatment and the power for good exercised by the family physician in these troublesome conditions.

7. The clinical picture presented by these unfortunates, laying especial stress on the alteration of the facial expression and the distressing and annoying condition of the child during sleep.

A New Examination as to the Blood-Changes after Exposure to Heat. (Neue Untersuchungen über Blutveranderungen nach thermischen Eingriffen. *Centralblatt für klinische Medicin*, 1893, No. 49.) By W. Winternitz.

In general the red and white blood-cells and hæmoglobin were increased. The increase in the red blood-cells in one case was one million eight hundred and sixty thousand; the leucocytes were increased threefold, and the hæmoglobin was increased fourteen per cent. Active muscular movements produced the same increase to a less extent. When heat was applied locally there was a diminution in the number of red and white cells. The same results were obtained in cases of severe anæmia. The author inclines to the belief that this was brought about by the bringing into active circulation of blood that was more or less dormant in different parts of the body, the blood being moved on the application of heat.

THERAPEUTICS.

IN CHARGE OF ALEXANDER D. BLACKADER, B.A., M.D.,
Professor of Therapeutics, McGill University, Montreal, Canada.

ASSISTED BY

D. I. EVANS, M.D.

Hydrastinine Hydrochloras, U. S. P., 1890. (*University Medical Magazine*, June, 1894.) By Horatio C. Wood, M.D., LL.D., of Philadelphia.

Among the novelties of the recent "United States Pharmacopœia" is a salt of the artificial alkaloid which was first produced by Martin Freund by the oxidation of hydrastine. It is a yellow, crystalline, somewhat deliquescent powder, which is exceedingly soluble in water. At present writing, although its medical properties have not yet been thoroughly worked out, it bids fair to be a very important addition to the resources of the profession. Its physiological and therapeutic range seems to be very wide. Kiselew has used it to some extent with alleged success in epilepsy, having been led to its trial by the previous observations of Professor Tarchanoff that it is capable of arresting convulsive attacks of epileptic guinea-pigs, and by his own experiments, which show that it decreases the excitability of the psychomotor cortex of the brain. Its action upon the spinal cord

seems to be that of a depressant; at least Marfori and Archangelsky assert that the paralysis and loss of reflex activity which are produced by poisonous doses in the lower animals are of centric origin; and it is even claimed that it is the natural antagonist of strychnine.

Our present knowledge indicates that hydrastinine belongs to the group of poisons which have a universal action upon muscle-fibres, so that it affects the voluntary muscles and also the muscular coats of the intestines and the muscle-fibres connected with the circulation. It certainly would, in overwhelming dose, paralyze these muscle-fibres, but, as with strophanthus and most other known muscle-poisons, the period of paralysis is preceded by a long period of excitement. Thus, according to Von Bunge, the intestinal peristalsis is markedly increased by the salts of hydrastinine, while all observers have noticed that the blood-pressure is greatly raised. The increase of the pressure seems to be in part due to the direct stimulation of the heart, and in part to the outcome by the stimulation, contraction of the blood-vessels.

Both Marfori and Von Bunge have found that the alkaloid greatly increases the amount of work done by the isolated frog's heart placed in a Williams apparatus or other form of artificial circulation. It is true that in poisoning with the drug there is a final fall of the arterial pressure, which is in part the result of lack of heart-power; but this failure of the heart seems to be caused indirectly, and not to be the result of an immediate action of the drug upon the viscus, since Marfori has shown that even when the pressure is very low artificial respiration will restore it to the norm. Evidently the heart depression at such times is due to an excess of carbonic acid, which has been accumulating in the blood.

That the blood-vessels are contracted during the period of high pressure has been shown by the experiments of Archangelsky and of Marfori. Using Roy's oncometer, Marfori has determined that the drug greatly decreases the size of the kidney; and asserts that the contraction of the vessels in the kidney may be so powerful as even to arrest secretion. Moreover, in the elaborate experiments of Archangelsky, it was shown that the contraction of the vessels is chiefly of peripheral origin; in other words, is chiefly due to a direct action of the drug upon their muscular coats.

Hydrastinine is evidently a heart tonic, and although it has been introduced into therapeutics for other purposes, it will probably prove to be a valuable remedy in cases of cardiac weakness, and certainly should be tried with this object. It is plainly a much safer remedy than the alkaloid hydrastine, out of which it is produced and which it seems about to replace, in that even when in toxic dose it does not directly depress the heart.

Its influence as a calmative depressant of the brain and spinal cord, conjoined with its stimulant action upon the heart and arterioles, should render hydrastinine a very valuable remedy in cases of general feebleness and lack of circulatory power occurring in hysterical women and men; and when to these powers is added the extraordinary influence it possesses over

the uterus, its probable importance grows. In all forms of menorrhagia, whether due to simple atony, to fibroids, or even to more severe organic disease, hydrastinine is a very valuable remedy.

The experience of Dr. Wood accords with much that has been determined in finding that it is distinctly more powerful than ergot. The arrest of the hemorrhage is usually so prompt that it hardly can be due simply to vascular contraction; and there seems little reasonable doubt that the alkaloid is a powerful ecbolic, notwithstanding the contrary assertions of Von Bunge, who bases his belief simply upon the fact that in two experiments he failed to provoke abortion or uterine contractions in pregnant animals by large or even fatal doses of the alkaloid. It is notorious, however, that even ergot frequently fails to act, and Archangelsky has found that in pregnant puerperal bitches, cats, and rats hydrastinine will usually produce pronounced rhythmic contractions of the uterus. Moreover, Dr. Faber, as the result of a number of trials upon women, states that hydrastinine given hypodermically during labor very notably increases the force and length of the uterine contractions, causing a spasm which affects all portions of the uterus, and is similar in character to that provoked by ergot. In some of the cases there was uterine tetanus, lasting as long as fifteen minutes. Dr. Faber also asserts that distinct contractions can be produced in the unimpregnated womb.

On the Use of Sublimed Sulphur as a Local Application in Diphtheria. (*British Medical Journal*, March 3, 1894.) By Christian H. Bäumler, M.D.

The writer again calls the attention of the profession to the value of the local use of sulphur in the treatment of diphtheria. He has used it in his hospital practice for many years, and thinks its effects infinitely better than those of any other local application which he has used. He was first induced to use it by the recommendation given to it by Professor von Liebermeister ("Special Pathology and Therapeutics," Leipzig, 1885, vol. i. p. 232), who advises it to be applied abundantly in form of the dry powder to the diseased mucous membrane by means of a soft camel's-hair brush, the application to be repeated every hour or two hours, or only three or four times a day, according to the severity of the case. The action he considers merely a local one, and he thinks its principal field of usefulness will be diphtheria of the fauces, where it can be applied directly and abundantly. He is unable to give at the present a scientific explanation of its action, but an extensive experience of seven years justifies him in placing considerable confidence in its usefulness, and recommending it again to the use of others.

On Dulcin or Sucrol. (*Centralblatt für innere Medicin*, April 21, No. 16, 1894.) By Professor Kopert, of Dorpat.

This new drug, first produced by I. Berlinerblau, is said to be distinctly sweeter than saccharin, and to be more than two hundred and fifty times

sweeter than sugar. Chemically it may be described as paraphenacetol carbamid. It is an aromatic urea derivative related to phenacetin. It is a white powder, soluble in about eight hundred parts of water at 60° F., in fifty parts of boiling water, and in twenty-five parts of ninety-six per cent. alcohol at ordinary temperature. As to its physiological action it has been shown that while on rabbits it appears to have no special action, in dogs it appears to produce an icterus from destruction of the red blood-corpuscles, which, when severe, is fatal. In cats there is no evidence of blood-destruction, but they die with symptoms of cerebral paralysis. Frogs are affected similarly to cats. Professor Kopert considers that in the relatively small doses necessary to sweeten the food of diabetic patients, and of those suffering from obesity, the agent is harmless. He mentions a case where eight grammes were taken daily for three weeks with impunity. Ewald has also used it with good results in amounts up to 1.6 grammes per day. It appears to have a distinct advantage over saccharin, owing to its more truly sweet taste. Nevertheless, it would appear that some care is necessary in its dietetic use.

On Formaldehyd as an Antiseptic. (*London Lancet*, April 21, 1894.) By Chas. Slater, M.B., and S. Rideal, D.Sc.

The writers report the results obtained from an extensive series of experiments carried out with the view of testing the antiseptic and germicidal value of this drug. Formaldehyd is a gas with pungent odor, forming a clear, stable, practically non-poisonous solution, which in weaker solutions combines readily with sulphuretted hydrogen and with the volatile compounds derived from ammonia, thus acting as a deodorant. As an antiseptic they extol the forty-per-cent. solution as equivalent in strength to the third or fourth antiseptic in Koch's tables. Even in very weak solutions, they say that it has the power in a high degree of inhibiting the growth of the various microbes. In a one-per-cent. solution the more important bacteria were destroyed in from thirty to sixty minutes. A one to one-thousand solution proved very effectual in disinfecting soiled and infected clothing if allowed to remain in it overnight, while it had no ill effect on the clothing itself. The vapor also proves itself a powerful disinfectant, and from its harmless character, and the freedom from damage of articles exposed to it, would seem particularly adapted for the disinfection of rooms.

Poisoning by Guaiacol. (*Deutsche medicinische Wochenschrift*, May 29, 1894.) By Oscar Wyss, M.D., of Zurich.

A girl nine years of age was accidentally given five cubic centimetres (seventy-five drops) of guaiacol. In a short time she became unconscious; the conjunctivæ became injected, the corneal reflexes diminished, and the pupils no longer reacted to light; there were frequent attempts at vomiting, and the saliva flowed from the mouth in large quantities. The pulse became rapid, the sensibility of the skin much diminished. Finally, the

patient began to vomit, and the physician then detected the odor of guaiacol. The stomach was washed out, but she did not rally. The cyanosis gradually diminished, and instead of it a deadly pallor was observed; the respiration became frequent. Three and a half hours after the guaiacol had been swallowed the patient passed one hundred cubic centimetres of brownish-red urine. The spleen and liver soon enlarged, and the temperature fell to 35.5° C. (96° F.), and small hemorrhages were observed upon the skin of the arms and legs. The urine contained albumin, blood, and casts, and Ehrlich's carbolic acid test was positive. Jaundice soon appeared, the stupor increased, and the patient died on the third day.

The autopsy revealed an acute gastritis and enteritis, parenchymatous degeneration of the liver, acute hemorrhagic nephritis, parenchymatous degeneration of the heart-muscle, and ecchymoses in the pleura, peritoneum, endocardium, and pericardium. The spleen was much enlarged.—Julius Friedenwald, M.D., in *Maryland Medical Journal*, May 12, 1894.

SURGERY.

IN CHARGE OF HENRY R. WHARTON, M.D.,

Demonstrator of Surgery and Lecturer on Surgical Diseases of Children in the University of Pennsylvania; Surgeon to the Presbyterian Hospital, the Methodist Episcopal Hospital, and the Children's Hospital; Consulting Surgeon to the Presbyterian Orphanage.

AND

JOSEPH P. TUNIS, A.B., M.D.,

Assistant Demonstrator of Surgery in the University of Pennsylvania; Surgeon to the Dispensaries of the Presbyterian, Methodist Episcopal, and Children's Hospitals.

Hyderabad Method of Chloroform Administration. (*Lancet*, June 2, 1894.)

At a demonstration of the Hyderabad method of chloroform administration at the London Hospital, May 25, 1894, Surgeon Lieutenant-Colonel Lawrie remarked that the creed about chloroform is simple. The anæsthetic is administered by inhalation. During the administration of the anæsthetic the in-take of an overdose and interference with breathing should be avoided. In order to prevent these evils Syme's teachings are to be followed. Watch the respiration and do not be guided by the circulation, for chloroform does not cause failure of the heart before failure of respiration. Do not push the drug beyond the point of anæsthesia; the signs of complete anæsthesia being stertorous breathing, or abolition of corneal reflex. According to these principles, chloroform has been administered by Lawrie from 1847 to the present day without a death.

The experiments of the Hyderabad Commission on chloroform were performed by Dr. Lauder Brunton and Surgeon-Major Bomford. These experiments show (*a*) that the fall of blood-pressure under chloroform is harmless, is not due to cardiac failure, but is due to vaso-motor dilatation;

and (*b*) that chloroform anæsthesia is absolutely free from risk. That the fall of blood-pressure was due to vaso-motor dilatation was proved by the experiments of Drs. Gaskell and Shore.[1]

A practical fact is that "my students can be relied upon to give chloroform with care and safety." A practical application is "that if I and my students can give chloroform with uniform safety . . . you can do the same."

The notes on the anæsthesia of two cases operated upon by Mr. Treves are given. The chloroform was administered on one of the ordinary Hyderabad caps by Dr. Mahomed Abdul Ghany.

First Operation.—Excision of vermiform appendix. Patient aged forty-eight. Food taken 6 A.M. to-day. Before operation pulse 88, respiration 24. Chloroform administered in one-drachm doses at intervals of one minute. The struggling stage began two minutes and thirty-three seconds after administration was commenced, and lasted two minutes and forty-two seconds. Anæsthesia complete in five minutes and twenty-five seconds with five drachms of chloroform. Some delay caused by rigidity of abdominal muscles. Operation lasted thirty-six minutes and forty seconds. Total amount of chloroform one ounce. Patient had no vomiting and did well.

Second Operation.—Nephrotomy. Patient aged twenty-one. Food taken at 10 A.M. to-day. Before operation pulse 120, respiration 32. Struggling stage began two minutes and thirty-five seconds after administration was commenced, and lasted twenty seconds. Cap had to be removed for fifty seconds while patient vomited a slight amount of food and a quantity of bile. Anæsthesia complete in six minutes and fifteen seconds with five drachms of chloroform. There was occasional interference with the surgeon's manipulation by rigidity of the abdominal muscles. Operation lasted thirty-seven minutes and thirty-eight seconds, and eleven drachms of chloroform were used. Patient made an excellent recovery. He vomited after being put to bed, and three times during the night; but states that the after-effects of chloroform were in no way unpleasant. He vomited for three days and had a bad taste in his mouth and a very severe headache after an operation of nephrotomy when the anæsthetic was ether.

Mr. Treves said that there was but one objection to the Hyderabad method of giving chloroform, and that was that the abdominal walls were not completely relaxed.

On a Self-Inflicted Bullet Wound of the Head; Extensive Injury to Skull and Brain; Recovery. (*Edinburgh Medical Journal*, July, 1894.) By Allen Thomson Sloan, M.D., C.M.

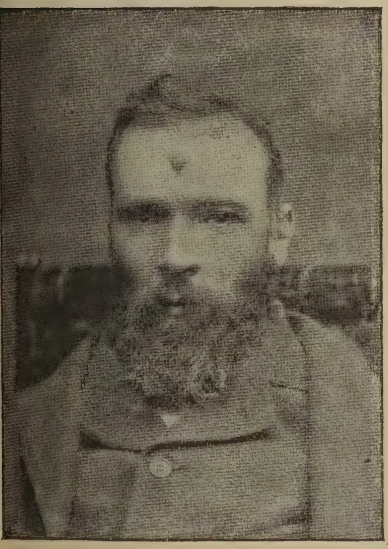
The following interesting case is described by Dr. Sloan: C., aged thirty-eight, foreman gunsmith, a highly-intelligent, exemplary man, had been suffering for some months from mental depression, the result of over-

[1] Hyderabad, 1892.

work and anxiety. There was a strong hereditary tendency on the paternal side towards insanity and cancer, the writer considering that there is a possible relation existing between these disorders. The patient complained of a rushing, oppressive feeling on the top of his head, and felt his work to be a perfect burden.

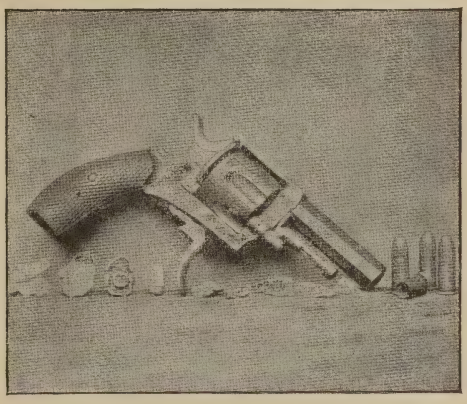
One day his mother heard a report of a pistol, and entering the room she found her son lying stretched out on the bed with a smoking revolver in his hand, and a hole in the centre of his forehead, from which a "tremendous amount of blood was rapidly flowing." This she somewhat controlled by binding up the head with a pledget of cotton-wool and a bandage. The patient was able to converse and, unassisted, to go twice to stool. Professor Annandale and the writer soon arrived, and found the patient in a considerable state of collapse, with no visible blackening of the skin, singeing of the hair, or burning of the edges of the wound with the powder. This is interesting from a medico-legal point of view, and is explained by the fact that "the muzzle was actually bored into the forehead, with the result

Fig. 1.



Picture of Dr. Sloan's patient, showing scar of bullet-wound in the forehead. (Reduced one-half from the original.)

Fig. 2.



Showing revolver, seven pieces of fractured bone, flattened bullet, empty and filled cartridges. The bullet weighed eighty grains; diameter, 0.32 inch. (Reduced one-half from the original.)

that the scalp was torn before the powder explosion took place, and hence the absence of superficial burning of the edges of the wound." The scalp was torn quadrilaterally, and the edges, one and a quarter inch long, inverted; and there was most extensive fracture and comminution of bone, with blood issuing from the mouth and nose. Under chloroform, six pieces of loose bone were removed with dressing-forceps, and the interior of the brain was explored by the finger. The bullet, which was thought first to be

a piece of bone, was flattened like a button, and was found lying on the cribriform plate of the ethmoid, and, on being removed, a longitudinal fracture of this bone was discovered, one portion of the ethmoid being blackened with the powder.

After the physicians had left, the patient again deliberately and without assistance walked to the bath-room, locked the door, and attended to himself, only to return to his room, fall on the bed, and remain in a quiet, semi-comatose condition for the rest of the day. In the afternoon he was placed in bed with the head lying far around to the left side, from which position it never moved for twenty-two days, except when forcibly lifted for the better dressing of the forehead. The next day the patient presented a "ghastly spectacle," but was perfectly conscious and able to swallow a little iced milk. He was sensitive to heat and cold, had no paralysis, and could move individual toes and fingers at will. During the first week he lost altogether at least four tablespoonfuls of brain matter, both gray and white being easily distinguishable. The temperature reached its highest point, 104.4° F., in the evening of the fifth day. On the eighth day the patient asked if the bullet had been extracted, and believed that it had come out back of the ear where they had found a large bed-sore. He talked intelligently to relatives who had come from a distance to see him. On the tenth day the mental condition was worse, the wound healing kindly and the physical condition improved, though a profound anæmia due to the loss of blood was present. On the twenty-third day, having recognized and talked with the writer, at periods, during almost this entire time, he was removed to the hospital, and a week later another loose portion of bone, previously felt, was removed. His mental condition growing worse, it was thought wise to send him to an asylum, which was done eighteen days later on. He became during the drive to the asylum, "absolutely and perfectly sane," and from that day till now there has not been the slightest symptoms of insanity detected, and the patient has been absolutely without the faintest delusions of any kind whatever.

On questioning him, later on, the attempted suicide was found to have been a premeditated one, and the patient recollected nothing of what happened to him when treated for the first twenty-three days at his own home. With the exception of marked diminution of the sense of smell, in every other respect—special senses, appearance, general health, and intelligence—the patient is "absolutely and perfectly well."

When last heard from, nine months after the accident, the patient was bodily and mentally in perfect health, but had had two epileptic fits after a severe attack of influenza.

Tuberculosis of the Breast. (*Annals of Surgery*, August, 1894.) By Charles A. Powers, M.D., of New York City.

The author considers that the relative frequency of tuberculosis of the breast cannot be approximately estimated from present data. It may, how-

ever, be considered of infrequent occurrence. Of the thirty-five cases collected two died of general tuberculosis, the breast affection being discovered at the autopsy; one case died of phthisis one year after operation and another four years. The after-history of the remaining twenty-nine cases is not known. Of these cases one only occurred in a male; the age varied from seventeen years to fifty-two; puerperal state and lactation seemed to act as a predisposing factor.

Diagnosis must rest upon the microscopic examination. The treatment consists in the removal of the tumor, and any glands which may have become involved in the axilla. The prognosis as regards local recurrence is good. After removal, the patient should be placed in climatic and other conditions suited to the prevention and cure of tuberculosis in general.

PEDIATRICS.

IN CHARGE OF T. M. ROTCH, M.D.,

Professor of Diseases of Children, Harvard University; Visiting Physician to the Children's Hospital, Boston.

ASSISTED BY

E. M. BUCKINGHAM, M.D.,

Instructor in Diseases of Children, Harvard University; Visiting Physician to the Children's Hospital, Boston.

Terrors of Childhood. (*British Medical Journal*, 1893, vol. i. p. 1270.) By Dr. Calvert.

Before a meeting of the Brighton and Sussex Medico-Chirurgical Society Dr. Calvert read a paper on the Terrors of Childhood, in which he said that the dread of solitude in twilight and in the dark is so universal that it must be attributed to heredity from primeval man; as to the fear of certain natural phenomena, signs of fear were shown by a child in the first few weeks, and that of falling long before the child walked. Dreams were terrifying from their vividness and from the child's inability to correct illusions. Movement was the best evidence of health; spontaneous movements were very obvious up to the third year, when they gradually gave way to those prompted by ends. Pain abated vital power, and thus movement, so immobility goes with melancholia. Children should be encouraged to convert their thoughts of terror into words, and should be carefully watched at night.

Etiology of Hernia in Childhood. (*Archives of Pediatrics*, April, 1894.) By T. H. Southgate, M.D.

In an interesting but brief way Dr. Southgate takes up the acknowledged causes of hernia in infancy and childhood, and then goes on to make a careful analysis of seventy-one cases taken from the records of the Children's Clinics of the Medical College of Ohio to see how far they can be

proved to depend, directly or indirectly, upon rickets. Of the ordinary causes for hernia, an inherited predisposition is said to be very common and to be manifested most frequently in infants under a year. Race has an influence, hernia being more frequent among the Jews, then in the English and Germans, and less so in the Irish. Anatomically an elongated condition of the mesentery and an incomplete formation of the transversalis, internal oblique, and cremaster muscles are important factors. By weakening the abdominal muscles, any failure of general health, bronchitis, whooping-cough, straining at stool, phimosis, and intestinal parasites are all of importance as causes.

Having enumerated the commonly accepted causes of hernia in childhood, Dr. Southgate passes to consider the points in the pathology of rickets that have special bearing upon the production of hernia. "Rickets is a disease of nutrition producing marked changes in muscles, ligaments, and other soft parts, as well as in bone. Indeed, muscular weakness is one of the most common and characteristic symptoms of rickets. The distended belly, the weakened muscular action of the intestine, the contracted pigeon breast, the enlarged abdominal viscera, and the bronchitis are the pathological conditions usually found in rickets, which may have a possible etiological relationship to hernia. Taking, then, the seventy-one cases of hernia, he found that they represented .8 per cent. of all the cases treated. Of them, thirty-one, or 43.6 per cent., were inguinal; and thirty-seven, or 52.2 per cent., umbilical. Fifty-five of the cases were males, and sixteen females. All the reported cases were under eight years of age, thirty-two were under one year, twenty were between one and two years, and nineteen between two and eight years. Of the entire number, one-sixth were ruptured during the first six months of life, one-sixth in the second six months, and one-fourth between two and eight years. Eight only were known to have been congenital. Taken broadly, then, the period of greatest danger of the formation of hernia is during the first two years of life.

Inquiring into the proportion of the above cases that showed undoubted evidence of rickets by the characteristic bony lesion, there are found to be 29.5 per cent. So high a percentage seems to the writer to show a causal relationship between the two, regardless of the pathological grounds just cited. It is interesting to note that the years during which infants seem to be most predisposed to hernia are identical with those in which we find rachitis to show its most active manifestations. The probability is that rachitis can cause hernia in either or both of these ways. Rickets, as is well known, lowers the whole general tone of the system, and this malnutrition, by producing chemical changes in the muscles, especially those of the abdomen, would act as a powerful predisposing cause to hernia. Secondly, it seems only "reasonable to suppose that the distention of the abdomen, resulting in a thinned and weakened condition of the abdominal wall and a consequent dilatation of the rings, the enlarged abdominal viscera, producing increased intra-abdominal pressure, the sluggish peristalsis, causing

periods of constipation, the bronchitis with its accompanying cough, the contracted thorax, depressing the abdominal viscera, all may act in a mechanical way upon rings congenitally weak, or upon those weakened by disease." In this way rickets will act as a direct exciting cause. It is highly probable, however, that in the majority of cases rickets finds a congenitally weak abdominal ring; upon such it would act with far greater power, and consequent danger of producing hernia.

Acute Lacunar Diphtheria of the Tonsils. (*New York Medical Journal*, March 10, 1894.) By H. Koplik, M.D.

Having given an analysis of thirty-nine cases of lacunar diphtheria, Dr. Koplik concludes that the tonsil is an organ which possesses a circulatory activity hitherto not attributed to it. It was formerly looked upon as an anatomical appendage whose purpose was problematic. Stöhr has demonstrated the constant migration of leucocytes from the interior of the tonsil (follicles) to the surface, and therefore into the lumen of the lacunæ. He is inclined to believe that future work may show that the tonsil in this functional activity exercises a destructive influence upon pathogenic bacteria, which may be on the surface of the tonsil or in the lumen of the lacunæ. Blood lymph and serum possess inherent destructive powers upon the life of bacteria (Nuttall, Buchner, Prudden). Leucocytes also have the power of attracting within their substance bacteria. Both these conditions exist in the tonsils. If we examine the lacunar plugs in tonsillar diphtheria we find leucocytes which seem to contain within them cocci and bacilli. It may be that the prolonged retention of the bacillus diphtheriæ for weeks in the depths of the lacunæ under the intimate influence of the above-mentioned phenomena of lymph and leucocyte activity may not be without effect on one phase of the vitality of the bacillus diphtheriæ,—its virulence. Such a theory as the above was the result of most careful experimentation carried on in the Carnegie Laboratory in New York.

NEUROLOGY.

IN CHARGE OF CHARLES W. BURR, M.D.,

Clinical Professor of Nervous Diseases, Medico-Chirurgical College, Philadelphia, Pa.

Apoplexy in its Relation to the Temperature of the Body, with a Consideration of the Question of Heat-Centres. (*American Journal of the Medical Sciences*, June, 1894.) By Charles L. Dana, M.D., of New York City.

The writer includes under the term apoplexy both intracranial hemorrhages and softenings due to embolism or thrombosis. Eighty cases of apoplexy in which an autopsy was made and the nature and seat of the

lesion noted, form the data by which the author seeks to clear up the answer to the following questions:

1. What is the general bodily temperature directly after an apoplectic stroke, and what is the later course of this temperature if such be found to exist?

2. What is the temperature of the two sides of the body as compared with each other, and with that in the rectum?

3. What is the relation of the temperature change to the nature of the lesion? And, 4, what relation to the seat of the lesion? Including in the answer to the last question a brief discussion of the subject of thermic centres of the brain.

1. All intracranial hemorrhages, whatever their lesion, are much more apt to be accompanied with immediate disturbances of temperature than are necrotic processes from embolism and thrombosis. From a study of forty-five fatal cases there is on the first day after the stroke a rise of rectal temperature ranging from 100° F. to 102° F., averaging 101.7° F. On the second day, if the cases are not immediately fatal, the temperature falls a little, and averages about 101° F. or 100½° F. In rare cases a sudden initial fall of temperature may occur. In acute softening (thirty-eight cases) the initial fall and early rise do not occur unless the process is very extensive or involves the pons. Therefore the presence of any disturbance of temperature on the first and second days indicates a hemorrhage, and is in addition of serious import.

2. In apoplexy due to hemorrhage the temperature is greater upon the paralyzed side than on the normal, the difference averaging about one degree. In acute softening this unilateral difference of temperature does not occur or is extremely slight.

3. The rise of temperature due to apoplectic lesions depends more upon the extent and nature of the lesion than upon its location. Lesions of a hemorrhagic character in the cortex, however, are especially apt to cause a rise of temperature. Lesions in the pons also either of hemorrhagic or softening character almost uniformly cause a rise of temperature.

4. The clinical and pathological evidence establishing thermic centres in the human brain, aside from the facts mentioned, is yet inadequate.

Two Cases of Syringomyelia; One of Unilateral Type. (*Journal of Nervous and Mental Disease*, April, 1894.) By J. W. McConnell, M.D.

The author reports two very interesting cases from the service of Dr. Charles K. Mills. The first was gradual in onset, pains being noted of a shooting character in the right shoulder, hand, and arm, separately, twenty years previous to the present attack. Nine years ago his insensibility to heat attracted his attention through accidental burns received, and only noted when the scar or ulcer was seen. The burns persist at the present time as two large scars. There is a peculiar partial loss of thermo-sensibility in certain localities on the right side. There is also a changed sensi-

bility to pain in the same areas it is rather a retardation in transmission. Tactile sense is not impaired. Muscular sense is normal. There is no atrophy or loss of power. Electrical examination gives negative results. Knee-jerk and muscle-jerk are decidedly plus on both sides.

The second case showed first symptoms of weakness in the right lower extremity requiring the use of a cane; there was no accompanying pain. These symptoms first showed themselves seven years previous to the author's examination. Four years later stiffness and uneasiness with a positive pain showed themselves, though the pain was slight. The knee had become swollen and the muscles above somewhat wasted. Urinary trouble did not commence till the fifth year, when difficulty in passing urine was experienced, apparently due to diminished expulsive force. The condition found is a peculiar deformity of the right leg. There is much muscular wasting, the joint is so changed in shape that the limb presents the arc of a circle with the convexity backward. The patient can bend the knee, but the weight of the body increases the curve when walking. The left limb is normal. Movements of the right foot are impaired, but not lost. Movements of the right upper extremity are not impaired, but there are muscular fibrillary tremors, as also in the leg. Reflexes are increased in the right leg alone. Thermo-anæsthesia extends from the fourth rib on the right side down the trunk and left leg, irregularly across the right shoulder and down the arm of that side. In certain localities the loss of temperature sense is less marked.

The conditions of the anterior and posterior surfaces of the body are similar. The ability to differentiate between the sharp and dull points of the compass is almost entirely lost over the areas of thermo-anæsthesia, and the loss seems the most marked where thermo-anæsthesia is most decided.

Alcoholic Paralysis with Fatal Hæmatemesis. (*University Medical Magazine*, April, 1894.) By J. M. Shepherd, A.M., M.D.

The author summarizes the symptomatology of this disease as follows: "Neuralgic pains, paræsthesia in the legs, muscular weakness, hyperæsthesia, anæsthesia, rapid atrophy, with pain on pressure to muscles; together with these motor and sensory disturbances there is ataxia, tendon reflexes are abolished, and vaso-motor symptoms, as œdema and mental disturbances." The prognosis is usually unfavorable.

The patient when first seen complained of "chills and fever," which had lasted a few days only, followed by persistent vomiting and great pain on pressure over the stomach; the tongue was coated and he had a bad taste in his mouth; eructations of gas, with ejections, first consisting of food, afterwards a clear watery fluid and slimy mucus; constipation marked; headache; no fever; pulse 80, with persistent cough. The patient's condition improved for a time, then paralysis threatened, but this passed away. In the final illness the condition found was a strong, well-nourished man with epigastric tenderness, mitral systolic murmur, unable

to stand, paralysis first involving legs, extensors more affected than flexors, wrist-drop well marked, muscles sore when grasped, hands and feet swollen and congested, pupils normal, grasp of hands weak, hyperæsthesia and anæsthesia in different regions, patellar reflex absent, ankle-clonus absent, foot-drop, no decided atrophy of muscles of arms or legs. Temperature 98.5° F., pulse 100.

The patient had no history of venereal disease, had enjoyed good health, had been a hard, constant drinker, but has never had delirium tremens.

The patient gradually grew worse, the vomiting and paralytic symptoms increasing, and died on the tenth day from hæmatemesis.

Some Medico-Legal Aspects of Aphasia. (*Journal of Nervous and Mental Disease*, May, 1894.) By Theodore Diller, M.D.

The author points out the necessity of determining: whether the person is sane; whether ideas can be conveyed to him; whether he can convey his ideas to others. The site of the lesion or the classification of the form of the aphasia does not enter into the consideration. If it can be shown that an aphasic is sane and that ideas can always be conveyed to him, and that he can, in some manner, unmistakably and invariably convey his ideas to others, it must be concluded that he is competent to make any civil contract.

The presumption is always that an aphasic is sane. Mental failure may be looked for with about the same amount of frequency after aphasia as after apoplexy, which is its most frequent cause. Minor degrees of mental failure do not count; there must be a degree of mental or emotional failure or perversion sufficient to cause a line of conduct in the individual clearly at variance with that prior to the onset of the affection. The ability of all cortical areas to correctly register percepts, and of the psychical areas to correlate them and form concepts, should be tested to establish sanity or insanity in these cases. Likewise the ability of the individual to communicate ideas by means of speech, writing, or signs.

A Contribution to the Pathology of Friedreich's Ataxia. (*University Medical Magazine*, June, 1894.) By Charles W. Burr, M.D.

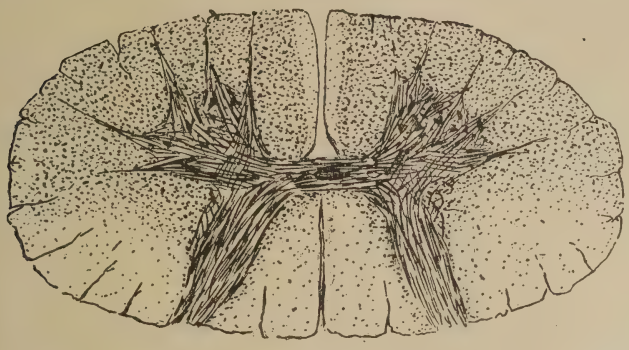
After a critical study of a case, with autopsy, the author comes to the following conclusions: Two views have been held as to the seat of the gross primary lesion. The first, and this is the more prevalent opinion, is that it is a disease of the spinal cord. The second, that it is cerebellar in origin while the changes in the spine are secondary.

The uniformity with which the changes have been found in definite regions of the cord (Figs. 1 and 2) in all cases makes it, the author believes, perfectly safe to regard that organ as the primary seat of the affection. As to what the nature of the lesion is, however, and as to whether the involvement of the lateral columns is a necessary factor, there is much room for dispute.

The disease is not congenital in the sense of appearing at birth, as the

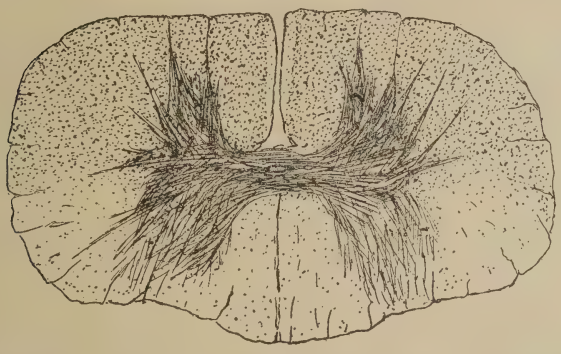
functions of the cord are perfect at that time. On the other hand, acute disease is not needed to produce cordal break-down, since, while in a few cases acute and usually infectious diseases have precipitated the symptoms, in most instances the condition has developed of itself and without de-

Fig. 1.



Friedreich's ataxia. Cervical swelling. Sclerosis of the posterior columns, direct and crossed pyramidal tracts, and direct cerebellar tract.[1]

Fig. 2.



Friedreich's ataxia. Upper dorsal region. Sclerosis of posterior columns and direct and crossed pyramidal tracts.

pendence on disease of other organs. Again, inheritance, either direct or indirect, while a very frequent factor, is not necessary, since some undoubted cases have been sporadic. Indeed, as to the whole matter, we must admit the view accepted by Gowers, that the ultimate cause is a congenital tendency of development by which the affected elements have a briefer period of vital endurance than the other tissues of the organism.

No theory as yet developed explains the whole question satisfactorily. The author believes that the view that a neurogliar sclerosis of the posterior columns is the primary lesion approaches most nearly to the truth.

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[1] Cuts kindly loaned by the University of Pennsylvania Press.

OPHTHALMOLOGY.

IN CHARGE OF CHARLES A. OLIVER, A.M., M.D.,
Philadelphia, Pennsylvania,
AND
EDMUND LANDOLT, M.D.,
Paris, France.

A Modified Operation for Extraction of Senile Cataract. (*Indian Medical Gazette*, December, 1893.) By T. Egappa, of the Kistna District.

Egappa, of Dachepalle, has summarized the advantages of primary cystotomy in the extraction of senile cataract before the corneal incision has been made. He claims that the difficulty of introducing a cystotome through the corneal wound in some cases is prevented; that the field of capsulotomy is unobstructed by effusions of blood into the anterior chamber; that the dangers of post-operative iritis are reduced to a minimum, and that the procedure avoids the employment of the ordinary form of shouldered cystotome.

He has successfully employed this modified method of operation for the last seven months "with satisfactory results and without a single failure."

Cataract: Morphine Hypodermically as a Means to prevent Prolapse of the Iris in Simple Extraction. (*Archives of Ophthalmology* for January–April, 1894.)—After the toilet of the lens in simple extraction, Eugene Smith, of Detroit, Michigan, employs a one-grain solution of eserine (salicylate of physostigmine), followed by a hypodermic injection of one-fourth of a grain of sulphate of morphine. The injection is repeated in eight hours' time and on the following morning, with the result that he is enabled to keep the pupil contracted *ad maximum* from thirty-six to forty-eight hours.

The writer claims that the injection "relieves the discomfort immediately following the operation, produces tranquillity, checks a cough if present, and does away with involuntary contraction of the recti or orbicularis muscles. Given hypodermically morphine *does not produce* vomiting."

Subconjunctival Hemorrhage Limited to the Outer Part of the Eye. (*The Lancet*, January 6, 1894.)—Rutherford Morison, of Newcastle-on-Tyne, has had the good fortune to see three cases of fan-shaped hemorrhages in the anterior aspect of the eyeball, where, following traumatism, a diagnosis of fracture of the anterior fossa had been made. Though all the cases in which the drawings of the subconjunctival hemorrhage had been made recovered, and the condition had not been proved by autopsy, yet, based upon three similar cases in which he had opportunity of making a post-mortem examination, he believes that the sign is of considerable importance as expressive, in the great majority of instances, of fracture through the orbital plate corresponding to the eye affected.

The Dangers of Sublimate Solution in Cataract Extraction. (*The Medical Mirror*, February, 1894.)—Murrell, of St. Louis, strikes the key-note of the whole question of the use of solutions of bichloride of mercury during cataract operations, when he says "careful detergence of the lids and all the parts about the eye likely accomplishes all that the more powerful antiseptics can and will."

DISEASES OF THE LARYNX, NOSE, AND SURROUNDING STRUCTURES.

IN CHARGE OF J. PAYSON CLARK, M.D.,

Physician for Diseases of the Throat, Massachusetts General Hospital; Physician to the Throat Department, Boston Dispensary.

The Treatment of Deviation of the Nasal Septum. (*New York Med. Journ.*, April 7, 1894.) By John O. Roe, M.D.

The septum may be forced into position without the employment of cutting or lacerating instruments (efficacious mainly when the deviation is confined to the cartilaginous portion of the septum), or prominent portions of the septum may be first removed with a suitable instrument, or the septum may be incised with a knife, or straightened by the employment of pins, or by fracturing the septum with comminuting forceps. The writer gives an interesting *résumé* of the instruments and measures used by different writers for this affection, and describes his own forceps for fracturing the septum. Operation is demanded where there is nasal stenosis or where there is pressure between the deflected portion and other parts of the nasal passage. The first step is to place the septum and turbinated bodies on the concave side of the septum in a normal condition. The septum is to be reduced as far as possible to normal thickness. In the majority of cases incisions with a bistoury on the convex side are necessary before using the redressing forceps. Wounding the mucous membrane on the concave side should be avoided. In many cases a twenty-per-cent. solution of cocaine will be sufficient to render the operation painless, especially with the use of a little chloroform just at the time of fracturing. The septum is held in position by a plug (made by wrapping wool or cotton around a small metal plate) in the previously-obstructed nostril. Before and after the operation the nose is cleansed with a saline solution of 1 to 5000 bichloride of mercury. The dressing may be left *in situ* four or five days before changing.

A Case of Torticollis following Removal of Adenoids of the Rhino-Pharynx, with Remarks on Nasal Reflexes. (*Annals of Ophthal. and Otol.*, April, 1894.) By Charles H. Knight, M.D.

All authorities, who take any notice of the subject, agree that adenoid hypertrophies in the vault of the pharynx may be the exciting cause of reflex disturbances in the larynx and elsewhere. The patient, a girl of nine,

was a mouth-breather. Although the general condition was bad, immediate operation was deemed imperative on account of complete nasal occlusion. This was done with the Gottstein curette in the usual manner. The hemorrhage was only moderate. Twenty hours later the patient's face was turned to the right shoulder and she could not move it back. Extension of the head was painful and there was a sensitive spot just to the left of the cervical vertebræ. There was no perceptible rigidity of the superficial cervical muscles. The surface of the pharyngeal wound forty-eight hours after the operation was foul and sloughy and its margins inflamed. In the course of ten days these conditions had disappeared. The muscles affected in this case were probably the recti capitis, which are in close relation to the posterior pharyngeal wall. There could have been in this case no actual wound of any of these muscles nor any contusion from extraordinary pressure in curetting. The most satisfactory explanation seems to be that a lesion of nerve filaments in the mucous membrane of the pharynx set up a reflex irritation in the muscles in question.

Primary Nasal Diphtheria. (*Boston Med. and Surg. Journ.*, May 24, 1894.) By Charles W. Townsend, M.D.

The writer reports seven cases of nasal diphtheria, in five of which the disease was primary in the nose, being confined to the nares in four, and in one extending later to the pharynx and larynx, while in the remaining two the disease was first pharyngeal, later involving the nose. From a review of the cases the writer makes the following points:

1. That primary nasal diphtheria may occur of a very mild type. 2. The dangerous character of these cases, as they are likely to go unrecognized for the following reasons: (*a*) Their resemblance to ordinary coryzas, a membrane not being noticed in some cases except by careful scrutiny. (*b*) The normal or only slightly elevated temperature often present with but slight constitutional disturbance. (*c*) The intermittent character of the nasal discharge. (*d*) The apparent recovery, even with cessation of nasal discharge, while Klebs-Lœffler bacilli are still present. (*e*) The fact that the patient having the bacilli in his nose, although apparently well, may transmit the disease in a fatal form to others. (*f*) The difficulty of always finding the bacilli in the nose when they are present. 3. The importance of bacteriological examination in all suspicious cases of nasal discharge. 4. The importance of prolonged isolation, together with a refusal to consider a case cured until *several* consecutive negative cultures have been obtained.

Epithelioma of the Soft Palate. (*Med. News*, April 28, 1894.) By A. H. Cleveland, M.D.

A case is here recorded in which the disease involved the uvula and a good part of the soft palate. The diseased tissue was removed under cocaine, by means of a cautery knife, practically without hemorrhage. The

wound healed in two weeks. No change was detected in the patient's speech after operation. There was no indication of a recurrence nearly a year later.

A Case of Cyst of the Epiglottis. (*Manhattan Eye and Ear Hospital Reports*, January, 1894.) By Charles H. Knight, M.D.

"Cystic tumors of the larynx are among the rarest of the benign growths met with in this region." They are generally retention cysts, their most common sites being the epiglottis and the vocal bands. Their contents are usually serous, but may be gelatinous, colloid, or bloody. The cyst may reach such dimensions as to necessitate tracheotomy. The majority of the cases have been males. The diagnosis is, as a rule, not difficult. Treatment by simple incision has in most cases been sufficient. Sometimes excision of a portion of the cyst wall has been necessary. Removal entire with a wire snare is preferable. In the writer's case a feeling like a foreign body in the throat was the symptom complained of. The cyst was attached to the left side of the epiglottis, and was removed by cold wire snare without hemorrhage or pain after the use of a ten-per-cent cocaine spray. No recurrence two months later.

CLIMATOLOGY.

IN CHARGE OF GUY HINSDALE, M.D.,
Lecturer on Climatology in the University of Pennsylvania, Philadelphia.

The Need of Sanatoriums for Consumptives in Australia. (*The Australasian Medical Gazette*, May 15, 1894.)—The editor shows that great numbers of consumptives land at Sydney and other seaports in Australia perhaps little or not at all benefited by the voyage, and that many of these die in the hospitals of the large cities. In Victoria and New South Wales over one thousand deaths are attributed to pulmonary phthisis in each colony every year. The climate of Sydney is notoriously most unsuitable for these patients. The editor suggests the establishment of small sanatoriums in different parts of the interior country where there are uplands, for example in the districts of Maranoa, Wanego, Mitchell, and Gregory. Here patients can spend the whole day in the open air, and easily obtain good food as well as a suitable climate. These sanatoriums should partake of the nature of small farms accommodating about twelve patients, so that whenever self-support is possible, light employment can be afforded, and should be strictly for those offering a prospect of cure. At the present time there is only one institution conducted on this plan in Australia. It is situated at Echuca, on the Murray River, one hundred and forty-six miles from the coast and surrounded by forests of gum-trees, which protect the town from winds and impregnate the pure atmosphere with the fragrance of the eucalyptus. The climate is equable, warm, and very dry, and eminently suit-

able for the effectual climatic treatment of phthisis. This institution is known as the "Consumptive Sanatorium of Victoria," and contains fourteen beds.

Flat Rock and Hendersonville, North Carolina, as Health Resorts. (*North Carolina Medical Journal*, June, 1894.) By Allard Memminger, M.D.

These places are situated in the extreme southwestern corner of the State, are south of Asheville, and have an elevation of over twenty-two hundred feet. They are protected by mountain ranges but are not sufficiently shut in to create draughts or interfere with sunshine. The climate is claimed to be everything requisite for the cure of tuberculosis. The author very wisely takes exception to the assertion, sometimes made, that consumption is not found in western North Carolina. He says he has frequently met with it, "as must inevitably be the case elsewhere, if we take the modern view of the pathology of the disease." The author has observed good results from this climate in phthisis attended with dyspeptic symptoms; in neuralgic and other nervous affections; and in anæmia in young women, especially if Virginia lithia water be prescribed. The highest temperature reached is 87.5° F.; the lowest, 3° F., the mean relative humidity 77.9 per cent., and average rainfall, forty inches.

Yellow Fever,—Its Relations to Climate and to Hygienic Measures in the United States. (*Virginia Medical Monthly*, June, 1894.)—Dr. Julius C. Le Hardy, in an analysis of all the epidemics of yellow fever in the United States, shows that this disease acts, in every respect, like other epidemic diseases; its occurrence depends entirely upon the condition of the place: if cleaned and properly drained, the disease will not propagate, whether in northern or southern latitudes, whatever may be the amount of the rainfall, the heat of the sun, or the number of persons brought in with the disease.

The winter prior to the epidemic of 1876, in Savannah, was exceptionally mild, the spring setting in early with high temperature; the rainfall was sufficient to fill swamps, ponds, and low places. In June eighteen inches of water fell in thirteen days. Dams broke and flooded hundreds of acres of land. Stagnant water, covered with green scum, could be seen in every direction, and the heat in June, July, and August was extremely oppressive, and at times stifling. Malarial fevers occurred earlier in the spring than usual; the number of cases increased, and the type became more virulent as the season advanced. A case of yellow fever occurred in June and the disease was declared epidemic August 21, and invaded every corner of the city. Drainage and other sanitary measures have been rewarded by a fall of fifty per cent. in the general death-rate; malarial fevers have disappeared to a large extent, and allied affections, such as rheumatism, pleurisy, enlarged spleen, and jaundice, are stated by the author to be in-

frequent, and lands idle for years are now in a high state of cultivation. "Just as long as the laws of hygiene will be carried out by those in authority, and by the people, yellow fever shall *never* be epidemic here again."

PATHOLOGY.

IN CHARGE OF ALLEN J. SMITH, A.M., M.D.,
Professor of Pathology in the Medical Department of the University of Texas, Galveston, Texas.
AND
HENRY W. CATTELL, A.M., M.D.,
Demonstrator of Morbid Anatomy in the University of Pennsylvania; Prosector to the American Anthropometric Society; and Pathologist to the Presbyterian Hospital, the Institution for Feeble-Minded Children at Elwyn, etc.

Tumors of the Breast. (Three lectures delivered at the Royal College of Surgeons of England, June 4, 6, and 8, 1894, *Lancet*, June 9, 16, and 23, 1894.) By Raymond Johnson, M.B., B.S. (Lond.), F.R.C.S. (Eng.).

A satisfactory nomenclature based on definite structural and clinical features would very much lessen the present great difficulty in the accurate clinical diagnosis of tumors of the breast. This difficulty is increased because the microscopic appearance of the glandular epithelium is different in various stages of rest and activity and at different ages, while chronic inflammatory changes frequently induce secondary changes in the epithelium, which closely resemble tumor-formation. Again, the microscope often fails to tell the difference between the fibrous tissue of tumors and chronic inflammation. Cystic formations add to the difficulty. Except those arising independently of the glandular tissue, cysts are classified as follows:

I. Cysts resulting from the distention of the proper glandular structure of the organ. These are not associated with actual tumor-formation.

II. Cysts forming an essential part of the structure of tumors, simple or malignant. These result from the distention of glandular elements existing in a distinct tumor.

III. Cysts occurring in tumors as the result of certain conditions,—*e.g.*, hemorrhage and degenerative softening. These are told by examination of other parts of the tumor, and by absence of epithelial lining in their walls. The word tumor should be restricted to an actual new formation.

As a discrepancy often exists between the pathological and clinical features of a tumor, combine microscopic with clinical evidence. Inquire "what is the relation of the tumor to the part in which it lies?"

In considering the formation of breast tumors we have two factors, glandular elements and connective tissue. The first is represented by smaller ducts with acini and by the larger ducts. A simple tumor must show the absence of infiltration and must have a definite fibrous capsule, and thus presents no malignancy either general or local.

Classes of simple encapsulated tumors.

I. Those composed solely of some form of connective tissue.

II. Those which contain glandular tissue.

Tumors of the first variety occurring in the breast are fibromata, myxomata, and lipomata, and are very rare. Fibromata are hard or soft. (Two examples are quoted: a hard fibroma weighing seven pounds, and a soft fibroma which was re-

moved from a man.) Fibromata may occur as encapsulated tumors attached to the surface or periphery of the gland or as polypoid growths into one of the large collecting ducts. Confusion is occasioned by using the term fibroma for fibro-adenoma and certain fibrous over-growths in the breast tissue. The name "*diffuse fibroma*" has been used for hypertrophy of the whole mamma; this condition has no more right to the name than *hypertrophic cirrhosis of the liver* has to be called *diffuse fibroma of the liver.*

Tumors of the second variety may be:

I. Pure adenomata. This is the typical glandular tumor, is rare, and is composed of tissue closely resembling the normal breast. The term adenoma should not be applied to varying conditions of glandular hypertrophy affecting the breast tissue and forming an integral part of the gland. This tumor has been called "typical non-carcinomatous or circumscribed epithelioma." The author asks, "Can anything justify the use of the term non-carcinomatous epithelioma?"

II. Fibro-adenomata. These are the tumors known as "chronic mammary tumors;" they contain glandular and connective tissue in varying proportions. They should not be called fibromata. Varieties:

1. Those in which the glandular tissue resembles the acini of a normal breast. The epithelium varies from a single layer of cubical or spheroidal cells set upon a basement membrane to several layers of small epithelium beneath which no basement membrane can be detected. The basement membrane is very inconstant. The absence of large ducts is almost constant.

2. Those in which there is more or less cystic change in the glandular tissue. The cysts may be microscopic or macroscopic.

3. Those in which the glandular tissue takes the form of fine cleft-like spaces intersecting the tumor. It is impossible to say what part the acini and the smaller ducts play in this formation, since the acini may become much compressed.

4. Those in which the glandular tissue intersects the fibrous tissue, forming papillary and foliaceous masses.

The proper view to take of these growths is that the glandular tissue is an essential portion of them, and not that they are fibromata with accidental remains of glandular tissue. Because,—

a. Clinical evidence shows that the growth is always encapsulated, and is not a modified breast lobule.

b. The relative amount of glandular tissue increases as the tumor grows, and presents an appearance which it is impossible to explain as the result of formation of fibrous tissue around it.

c. All the constituents of a breast lobule are not present, the larger ducts being almost constantly absent.

d. A fibroma is a simple encapsulated tumor, and shows no tendency to invade the part in which it lies.

e. The common occurrence of these tumors in the breast is difficult to explain if they are called fibromata, since fibromata are not common in other situations where fibrous tissue is equally abundant. Their occurrence is easily explained as adenomata.

f. Pure fibromata are rarely met with in the mammary gland.

The name of a tumor should be derived more from the presence of a highly differentiated structure, as glandular tissue, than from the mere presence of fibrous tissue. These tumors should not be called "*acinomata,*" as suggested by Delbet, because it is inadvisable to crowd the nomenclature.

III. Soft fibro-adenomata. These tumors are sometimes called "soft adenoids" or "adeno-sarcomata." They are not sarcomata. The soft fibro-adenomata resemble the tumors of the foregoing class, except that their consistency is softer and they are more rapid in growth. The difference exists only in the stroma, which is a highly

cellular tissue instead of a dense fibrous tissue. These tumors differ from the sarcomata: first, in being perfectly encapsulated and containing glandular tissue as an essential part of their structure; second, in being throughout non-malignant and never recurrent; third, in not giving rise to secondary deposits in lymphatic glands or elsewhere.

The author, in his second lecture, gives as the fourth member of the simple glandular tumor group the cysto-adenomata. These are rapidly-growing encapsulated tumors, characterized by the transformation of the glandular tissue into large cystic spaces occupied by papillomatous intracystic growths. The cysto-adenoma should not be called cysto-sarcoma, because it does not partake of the nature of a sarcoma either microscopically or clinically. The "sero-cystic tumor" of Sir Benjamin Brodie is, in point of fact, a cystic degeneration of the whole breast; there is no tumor.

The origin of the adenomata may be accounted for as follows: first, they arise by a modification of a lobule of the breast; second, they arise in small, outlying, detached lobules of the gland; third, they commence as growths into the ducts. The history, relation, and structure of these tumors are against the view that they are a part of the gland tissue proper. The second view accounts for the origin of only a few of these tumors. The situation of those growths which are not superficial or peripheral, near the nipple, is suggestive of a duct origin. Fibro-adenomata may be superficial or peripheral, and they probably arise in isolated fragments of gland tissue, or they may lie in the substance of the mamma and are then, probably, of duct origin. The former variety are believed to occur in early life and are hard; the latter occur later in life, are soft, and tend to become cystic.

Duct-papilloma closely resembles duct-adenoma. This tumor is round, and pressure upon it may cause a milky or blood-stained discharge. It is attached to the wall of a cyst by a slender pedicle. Microscopically, it consists of delicate, vascular, papillary processes covered with cubical or columnar epithelium. The occurrence of hemorrhage is no sure evidence of malignancy. The difference between this tumor and duct-carcinoma is that the former is altogether confined to the interior of the distended duct, while the latter infiltrates the surrounding tissue. Given,—a tumor, isolated in the substance of the breast, near the nipple, and associated with a blood-stained discharge from the nipple. The diagnosis lies between duct-papilloma and duct-carcinoma. Excise the growth, and, if the microscope reveals malignancy, excise the whole breast. Excision is required where a papilloma has reached great size and is situated centrally.

Complete absence of malignancy characterizes all the varieties of adenoma. Cases of reported recurrence of simple growths are believed to be due to the occurrence of unperceived smaller growths near the one removed. The term cysto-adenoma should not be applied to cystic degeneration of the whole gland. The prognosis of the first condition is favorable, whereas in the latter case it is unfavorable. In reply to the question, "Do tumors of the class adenoma exhibit any tendency to become carcinomatous?" the author agrees with Sir James Paget, who said, "I am not aware of any facts which prove, what is commonly believed, that adenoma of the breast may become cancerous." Cases of adenoma which have been reported as becoming cancerous are really cases of carcinoma developing around, and not in, a previous simple growth, or else they are cases of carcinoma in an organ already containing a simple growth, but having a separate existence. The chances of spontaneous removal of adenomata are rare.

The infiltrating or malignant tumors of the breast are, first, sarcoma, and, second, carcinoma.

A sarcoma is an infiltrating or imperfectly-encapsulated tumor, composed of embryonic connective tissue or some modification of it. Glandular tissue takes no essential part in its structure; but if present only represents the remains of the glandular

elements involved by the growth. Sarcoma of the breast is rare, there having been treated at the University College Hospital only fourteen cases of sarcoma in three hundred and ninety-six cases of breast tumor. Sarcomata infiltrate the surrounding tissues, frequently recur after removal, give rise to secondary deposits in the lungs and other internal organs, and are frequently found in the axillary lymphatics. The spindle-celled variety is most common. The round-celled, mixed-celled, alveolar, giant-celled, myxo-sarcoma, chondro-sarcoma, and osteo-chondro-sarcoma have been met with. A sarcoma, in some instances, may have a more or less perfect fibrous capsule. In its relations to the surrounding tissues sarcoma stands midway between adenoma and carcinoma. A case of sarcoma of the breast simulating cancer and one simulating cysto-adenoma are recorded. A case of alveolar sarcoma of thirteen years' duration is also recorded.

The different varieties in the histological structure of carcinoma of the breast were treated of in the third and last lecture. The diffuse variety of carcinoma was thought to occur either as the result of infection through the lymphatics from a single focus, or as the result of a wide-spread carcinomatous change in the glandular tissue of the organ. An important question to the surgeon in the consideration of the nodular variety of carcinoma of the breast is "how freely is it necessary that the surrounding parts be extirpated in order that the surgeon may in confidence hope that he is wide of the disease?" To the naked eye the gland may present a perfectly healthy appearance, except in that portion occupied by the tumor; but under the microscope the gland shows the presence of columns of cancer cells in the healthy-appearing portions. This infected zone varies in extent with the nature of the carcinoma and the character of the tissues around it. In cases of squamous carcinoma the area is small, and the naked eye does not seriously under-estimate the real extent of the disease. In cases of glandular carcinoma the infected area is very extensive, even when the tumor is small and situated peripherally. This area of infection may be found in any of the tissues about the tumor, breast, fat, or muscle, the cancer cells having been diffused by means of the lymphatics. Small deposits of epithelial cells are very frequently found in the fascia over the pectoralis major muscle, and when this occurs the rapid recurrence of the growth is to be expected. In many breasts, the seat of carcinoma, involution has begun, and there is an increase of fibrous tissue with atrophy of the glandular elements. Many carcinomatous breasts are cystic; but not more commonly than are breasts undergoing involution.

The occurrence of chronic irritation of the epithelium about the breast is supposed to predispose to the development of glandular carcinoma. Paget's disease of the nipple is the result of such a chronic irritation, and is accompanied by a proliferation of the epithelium lining the ducts and acini. Chronic mastitis is also frequently accompanied by proliferation of the epithelium and widening of the acini. These cases are few. Proliferative changes are more commonly met with in the glandular epithelium of the carcinomatous breast than in the epithelium of a gland not so diseased. These changes are not the result of the growth, nor are they the cause of the carcinomatous growth; but they predispose to it.

Carcinoma of both breasts is probably an example of primary disease in both and not primary disease in one and secondary in the other.

In operating on cancerous breasts the surgeon should aim at the removal of a free margin of tissue around the growth in order to avoid the new lymphatic deposits; also at the removal of all the breast tissue, regardless of its distance from the growth.

Conclusions: 1. A precancerous state of the breast tissue exists in the form of certain epithelial proliferations. 2. Such changes do not result from the presence of the tumor, but probably precede its formation. 3. The development of cancer is not simply the result of these proliferative changes, but it is favored by their presence.

In excision of cancerous breasts three points are to be observed: first, that the

skin overlying the breast should be freely removed; second, that the fascia overlying the pectoralis major muscle should be freely removed; third, that the peripheral parts of the breast should be freely removed.

J. M. S.

Trichotillomania.—Hallopeau (*The Medical Week*, May 25, 1894) reports a case in which there were violent attacks of itching in the hairy parts of the body. The patient sought relief by tearing out the hairs. To the naked eye, as well as under the microscope, no lesions of the skin or of the hairs could be made out. The disease is of very long duration, and is probably incurable. To the affection the name trichotillomania has been applied. The treatment which has given most relief is the protection of the parts by some impervious material, such as a varnish or an Indian-rubber envelope.

MISCELLANEOUS.

Period of Infection. (*Medical and Surgical Reporter*, June 9, 1894.) Rules of the Pennsylvania State Board of Health.

The period of infectiousness of contagious diseases is considered to be,—

Small-pox.—Six weeks from the commencement of disease, if every scab has fallen off. *Chicken-pox.*—Three weeks from the commencement of the disease, if every scab has fallen off. *Scarlet fever.*—Six weeks from the commencement of the disease, if the peeling has ceased and there is no sore nose. *Diphtheria.*—Six weeks from the commencement of the disease, if sore throat and other signs of the disease have disappeared. *Measles.*—Three weeks from the commencement of the disease, if all rash and cough have ceased. *Mumps.*—Three weeks from the commencement of the disease, if all swelling has subsided. *Typhus.*—Four weeks from the commencement of the disease, if strength is re-established. *Typhoid.*—Six weeks from the commencement of the disease, if strength is re-established. *Whooping-cough.*—Six weeks from the commencement of the disease, if all cough has ceased.

Under judicious treatment the period of infectiousness may be considerably shortened, but no child suffering as above should be admitted to any school after a shorter absence, and then should be provided with a medical certificate that he or she is not liable to communicate the disease.

Length of Quarantine.—Teachers or children who have been exposed to infection from any of the following diseases may safely be readmitted to the school, if they remain in good health (and have taken proper means for disinfection) after the following periods of quarantine: diphtheria, twelve days; scarlet fever, fourteen days; small-pox, eighteen days; measles, eighteen days; chicken-pox, eighteen days; mumps, twenty-four days; whooping-cough, twenty-one days. Adults may be readmitted immediately, if they disinfect their clothes and persons.

BOOK REVIEWS.

AN INTERNATIONAL SYSTEM OF ELECTRO-THERAPEUTICS: FOR STUDENTS, GENERAL PRACTITIONERS, AND SPECIALISTS. By Horatio R. Bigelow, M.D., and Thirty-eight Associate Editors. Thoroughly illustrated. In one large royal octavo volume of 1160 pages. Extra cloth, $6.00 net; sheep, $7.00 net; half-Russia, $7.50 net. Philadelphia: The F. A. Davis Company, publishers, 1914 and 1916 Cherry Street.

This extensive work, of over one thousand pages, is the latest and best exponent yet offered to the profession of the theory and practice of electro-therapeutics. Medical electricity has, hitherto, suffered greatly from a want of harmony in the use of terms, proper means of comparing results, and, most of all, from the widespread feeling of disappointment and distrust which inevitably follow the rash promises made by electricians whose special education is deficient and whose equipment is meagre. The present treatise will go far towards correcting these defects, and must inevitably raise in the esteem of the medical profession and the public the specialists who master the science of electricity, as unfolded in this system, and who attain success in the art of applying this remedy for the cure of the various diseases for which it is advocated.

In the very entertaining preface we are acquainted with the latest views of Professor William Crookes and the brilliant advances made by Nikola Tesla; the introductory chapter by Dr. Herdman, of Ann Arbor, on the necessity of special education in electro-therapeutics, and the carefully-written chapter on electro-physics by Dr. Duff, of Indiana, afford an admirable outline of a course of instruction in this subject which might well be followed by medical schools. A laboratory of electro-physics and practice in the application of electricity in hospitals and dispensaries ought to be afforded by every school that pretends to give a complete course in medicine.

The best chapter in the book is on galvanism, treated in a most interesting way by Dr. J. Mount Bleyer, of New York City, and embraces one hundred and twenty-six pages. This author exhibits such an admirable literary style and his subject is so thoroughly treated and so well illustrated that the reader's attention is firmly held to the end. Engelmann's article on faradism is of value for its attempt to standardize the primary and secondary coils and its exposition of the different uses of slow and very rapid interruptions. As to the method of action of the faradic current this author says, "I fully agree with Stein, who believes that in the mechanical vibratory action of the faradic current we must seek the cause of its physiological action."

Dr. Frederick Peterson contributes an excellent article on cataphoresis, by which remedial agents are diffused through the tissues and fluids of the body to improve nutrition, to produce anæsthesia, to relieve pain, to destroy germs, and to modify morbid processes. He treats obstinate facial neuralgia, for example, with a ten- to twenty-per-cent. solution of cocaine at the anode, and reports success. Lavat, of Paris, advises for fæcal occlusion or intestinal paresis an electric injection. A positive electrode is introduced high up in the bowel; the broad negative plate is placed on the abdomen; a tepid salt solution is then introduced by irrigation and the current applied. The treatment is worthy of trial.

One naturally turns with interest to the discussion of diseases of the uterus and

appendages. The chapters by Massey, Grand, and Famarque, pupils of Apostoli, Kellogg and Goelet unfold this subject at great length. There is some want of harmony on vital points in this discussion. Kellogg remarks that Massey finds that the puncture of uterine tumors through the abdominal wall has been rendered safe and practical, although it has been always regarded by the profession at large as too hazardous to be safely employed. Massey himself, however, states that the impression which first gained currency in this country that the method by electro-puncture was most effective was clearly a mistake. Kellogg makes a valuable addition to the armamentarium in a coulombometer which measures the amount of electrical work done by measuring the oxygen and hydrogen evolved by electrolysis.

Dr. Laphorn Smith, of Montreal, makes some wild statements as to abdominal surgeons, and attacks "the brilliant and dashing laparotomist who can make or mar a woman's fate in the brief space of fourteen minutes." His contribution is marred by too much narration of personal and office matters.

Riggs reports good results in the use of galvanism in melancholia and in the insanity of the climacteric period. As to the treatment of epilepsy nothing is added to the scanty data on this subject; the unfavorable reports of Erb, Althaus, and Bartholow are cited.

The chapters by Morton Prince on the neuroses, W. J. Morton on the spinal cord, and Leszynsky on the peripheral nerves are worthy of these neurologists, and will be read with profit by all who have occasion to treat nervous diseases. The articles by Byrne, Baldy, and Jacobi are also valuable features of this excellent treatise. G. H.

ESSENTIALS OF ANATOMY. INCLUDING THE ANATOMY OF THE VISCERA. ARRANGED IN THE FORM OF QUESTIONS AND ANSWERS. PREPARED ESPECIALLY FOR STUDENTS OF MEDICINE. By Charles B. Nancrede, M.D., Professor of Surgery and of Clinical Surgery in the University of Michigan, Ann Arbor. Fifth edition; with an appendix on the Osteology of the Human Body; the whole based on the last edition of Gray's Anatomy. 180 fine illustrations. Pages 388. Philadelphia: W. B. Saunders, 925 Walnut Street. London: Henry Renshaw. Melbourne: George Robertson & Co., 1894.

PART I. ESSENTIALS OF REFRACTION AND THE DISEASES OF THE EYE. By Edward Jackson, A.M., M.D., Professor of Diseases of the Eye in the Philadelphia Polyclinic and College for Graduates in Medicine, etc.

PART II. ESSENTIALS OF DISEASES OF THE NOSE AND THROAT. By E. B. Gleason, S.B., M.D., Surgeon in charge of the Nose, Throat, and Ear Department of the Northern Dispensary of Philadelphia, etc. Second edition, revised, 124 illustrations. Pages 290. Philadelphia: W. B. Saunders, 925 Walnut Street. 1894.

ESSENTIALS OF PRACTICE OF PHARMACY. ARRANGED IN THE FORM OF QUESTIONS AND ANSWERS. PREPARED ESPECIALLY FOR PHARMACEUTICAL STUDENTS. Second edition, revised. By Lucius E. Sayre, Ph.G., Professor of Pharmacy and Materia Medica, of the School of Pharmacy of the University of Kansas. Pages 200. Philadelphia: W. B. Saunders, 925 Walnut Street. 1894.

ESSENTIALS OF NERVOUS DISEASES AND INSANITY; THEIR SYMPTOMS AND TREATMENT. A MANUAL FOR STUDENTS AND PRACTITIONERS. By John C. Shaw, M.D., Clinical Professor of Diseases of the Mind and Nervous System, Long Island College Hospital Medical School. Second edition, revised. Forty-eight original illustrations, mostly selected from the author's private practice. Pages 194. Philadelphia: W. B. Saunders, 925 Walnut Street. 1894.

The popularity of "Saunders's Question Compends" is due largely to the great care exercised in the selection of the author for each work, the good print, and the

cheapness, the price being but $1.00 each, subject to the usual trade discount. As the Essentials of Anatomy has reached the fifth edition, and the other three second editions, comment upon these manuals seems unnecessary. It would be well in future editions to leave off at least some of the useless pages (in one case fifty) of print advertising the catalogue of medical and surgical works issued by the publisher. H. W. C.

A Text-Book on Diseases of the Eye. By Henry D. Noyes, A.M., M.D., Professor of Ophthalmology and Otology in Bellevue Hospital Medical College; Executive Surgeon to the New York Eye and Ear Infirmary, etc. Second and revised edition, 1894; large 8vo, pp. xvii., 816. New York: William Wood & Co.

Ophthalmology has made such rapid advances since the first edition of this book, in 1890, that one is not surprised to notice the many additions that the author has made in this revision in order to bring his latest teaching views abreast with the most recent information upon the subject. To the experienced ophthalmologist, to whom this book has become a valued friend, this, in a double sense, is most gratifying, as in it he finds both an erudite companion and a consummate helper to whom he can go when in doubt, and a safe guide and a wise teacher to those to whom he wishes to offer proper instruction.

Although the work has been increased by some eighty-three pages, yet by the employment of thinner paper the bulk of the volume has been actually decreased, thus rendering it less cumbersome than before. New plates and cuts have been added, and the index (that all-important guide to the contents of any text-book) is all that can be desired.

New and important matter has been generously interpolated throughout the pages of the volume, and, in fact, whole chapters have been freshened and brought to date.

Throughout, it is thoroughly consistent in its purposes, and deserves a large and constantly-increasing sale. C. A. O.

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PLATE I.



RIGHT EYE

INTERNATIONAL
MEDICAL MAGAZINE.

Vol. III.] SEPTEMBER, 1894. [No. 8.

ORIGINAL COMMUNICATIONS.

A CLINICAL AND MICROSCOPICAL STUDY OF TWO CASES OF GLAUCOMA ASSOCIATED WITH INTRA-OCULAR HEMORRHAGES.[1]

BY CHARLES A. OLIVER, A.M., M.D.,

One of the Attending Surgeons to Wills' Eye Hospital; One of the Ophthalmic Surgeons to the Presbyterian Hospital in Philadelphia; Consulting Ophthalmic Surgeon to St. Agnes' Hospital, etc., Philadelphia.

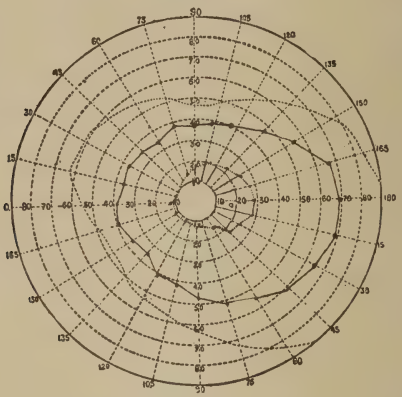
In the early spring of 1890, through the courtesy of Dr. Isaac Barton, of Philadelphia, S. T. C., aged sixty-two years, of New York City, was seen for the first time. The patient, a cultured and well-informed man, though with all the physical appearances of chronic alcoholic abuse and excess, stated that during the previous summer he had had a sudden, though temporary, attack of dimness in the right eye, as if he "saw through holes, especially up and out, with a smoky area directly ahead." This peculiar symptom repeating itself about four weeks before his first visit, and having persistently remained, induced him to apply for relief.

At the time of the primary examination, the right vision was reduced to one-fiftieth of normal; this amount of acuity being best obtained when the test-type was placed excentrically down and out. Uncorrected left vision equalled $\frac{5}{10}$, which could be brought to $\frac{5}{5}$ by the employment of + S. 0.62 D. ⌓ + C. 0.25 D. ax. 90°. Accommodative action in each eye seemed to be normal for age and refractive condition; that in the right eye being studied objectively by means of a retinoscope.

[1] Read before the American Ophthalmological Society, May 31, 1894, at the Third Triennial Meeting of the Congress of American Physicians and Surgeons.

As shown in the accompanying sketches (Plates I. and II.), kindly made by Miss Margaretta Washington, of Philadelphia, the ophthalmoscope revealed a well-marked perivasculitis with numerous hemorrhagic extravasations, especially in and around the macular region, scattered throughout the right eye-ground. In addition, there were swelling, œdema, and extreme pallor over a large retinal area just below and in the macular region of the same eye. Both nerves, though, of course, better seen in the left eye, were slightly, though glaucomatically cupped. The right field of vision, as here shown in Fig. 1, was somewhat limited to the nasal side, and gave evidence

Fig. 1.



Right field for white and green.

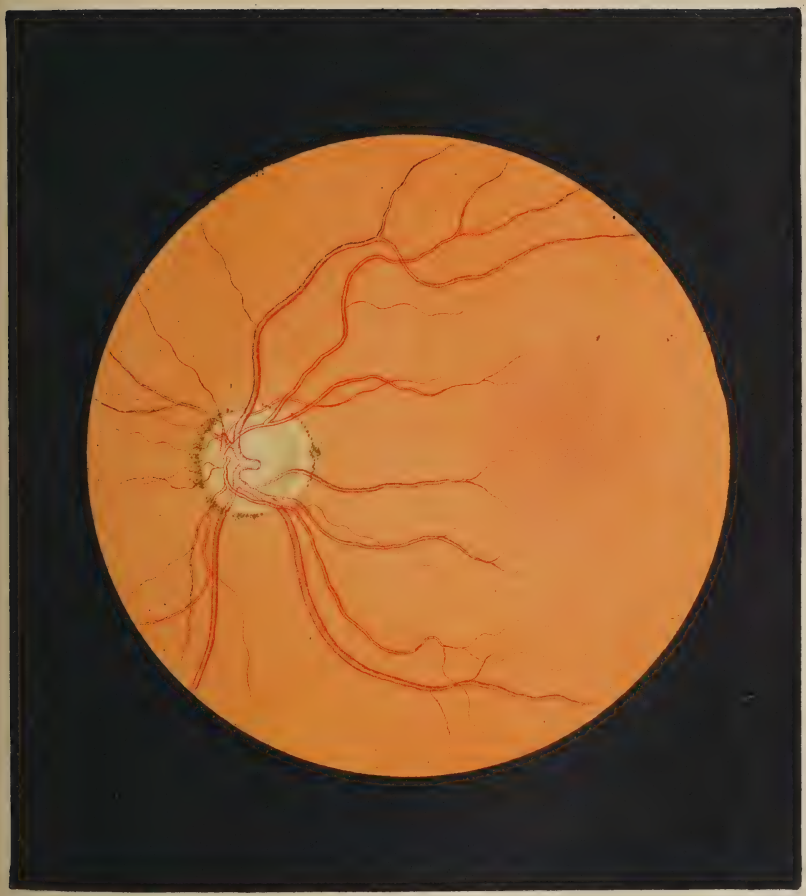
of a faint negative dimming throughout the green-field area. The left field of vision, as here reproduced in the four miniature sheets 2, 3, 4, and 5, proved to be quite interesting. Contracted, and with a large central absolute scotoma for both form and color, it seemed filled with innumerable small, irregular areas of faultily-named colorations. Thus, for instance, the red field was broken into numerous "brownish spots" on a red ground. Green was seen at many points as a dim "blue," whilst blue and yellow at times, especially in the lower outer quadrant, appeared "faded and bleached."[1]

Examination with worsteds, while evidencing a slight green blindness with the left eye, showed some very interesting peculiarities of color-sense in the right eye. Whilst being absolutely unable to see any object placed in the position of the positive central scotoma, he could, at times, when the wools were situated peripherally, make color differentiation between yellow and blue, though he was always able to grade the entire series into a system of intensities of tint that was remarkably correct.

Upon monocular exposure, the left pupil was found to be somewhat the larger; the irides, especially the right, responding freely and promptly to light-stimulus, accommodative impulse, and efforts for convergence.

[1] Patient states that he has always had difficulty in differentiating between purple and blue.

PLATE II.



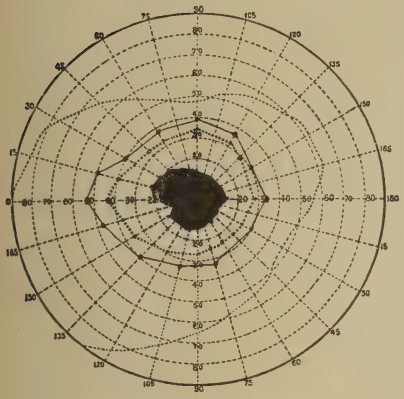
J. Moras lith Chile

LEFT EYE

Extra-ocular motion, both separately and combinedly tried, was intact in all directions. Intra-ocular tension was not apparently increased, though the scleras were somewhat rigid.

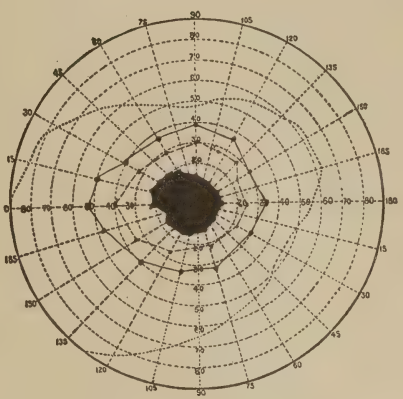
On the following day, our fellow-member, Dr. B. Alex. Randall, kindly made a series of rough pencil sketches upon prepared backgrounds, from which, with reference to an extended verbal description made at that time, the present water-color drawings of the fundus-lesions have been evolved.

FIG. 2.



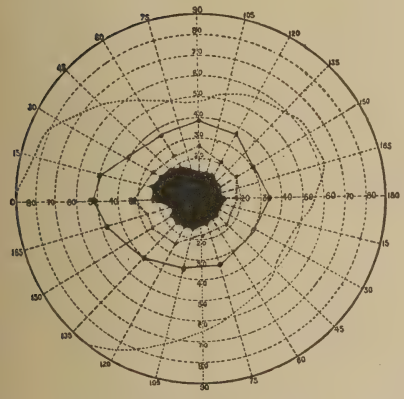
Left field for white and yellow.

FIG. 3.



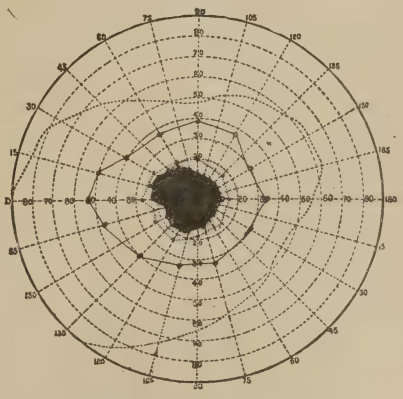
Left field for white and blue.

FIG. 4.



Left field for white and red.

FIG. 5.



Left field for white and green.

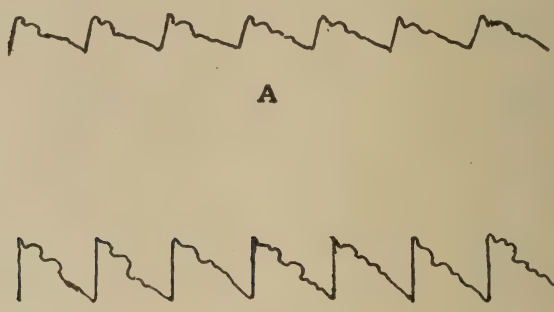
Careful repeated chemical analysis and microscopical examination of the urine failed to reveal the existence of any gross morbid animal or mineral deposit.

A systematic and extended physical exploration by my friend, Dr. J. P. Crozer Griffith, showed the want of any gross organic lesion, except a moderate degree of aortic regurgitation without discernible aortic stenosis; a faint systolic murmur that was present, being possibly organic, though

without evidence of any considerable degree of mitral regurgitation. The accompanying sphygmographic tracing (Fig. 6) shows the effect of the cardiac disturbance upon the radial pulse.

On the 3d of May, 1890, Dr. Wharton Sinkler kindly examined the patient and gave a diagnosis of chronic myelitis. At that time, the patient's gait was spastic, his toes dragged in walking, and he was obliged to use a cane to support himself. Loss of muscle-power also existed. The knee-jerks were greatly exaggerated, but there was no clonus. The plantar reflexes were exaggerated, and the front-tap reflex was present. Girdle-pain was complained of. Sensation in both feet was so greatly impaired

FIG. 6.



Sphygmographic tracings: A, hand at rest on knee; B, hand above shoulder. Tracings taken May 8, 1890.

that he could not differentiate compass points no matter how widely they were separated. In this region, a superficial touch could not be felt, but he perceived a deep prick. Sensation in both hands was good. The dynamometer registered eighty-five for the right and but fifty-two for the left.

The case was daily watched throughout the first weeks of the month, the hemorrhages slowly absorbing, the edges of the nerve-head becoming more and more visible, and the original shallow cupping, which at first, by reason of the slight neuritis, was only seen to the temporal side of the disk, gradually, though perceptibly, deepening and broadening. Vision, which increased to $\frac{3}{50}$ excentrically, remained persistently lost in the large area around the fixation point.

On the 27th day of the same month, there appeared such a curious series of irregular beadings in the temporal distributions of the retinal veins that Drs. William F. Norris and George C. Harlan were asked to look at the case. These beadings, which were spontaneous and slowly-moving by a series of jerks towards the disk-head, could be stopped, and a similar series of mobile beadings given to the nasal branches of the retinal veins by artificial increase of intra-ocular pressure obtained by slight though firm palpation with the finger upon the upper ciliary region through the half-closed upper lid.

In each instance, the impulse of the "beads" appeared to be synchronous with the heart's action. At this visit, the right radial pulse seemed to be the stronger and the firmer.

Two days later, the beaded currents in the entire venous series, with the exception of the upper nasal branch, were in motion; this current becoming broken and mobile upon the slightest external pressure upon the globe.

On the following day, the hemorrhages were almost gone and the swollen retina in the macular region seemed to have regained its proper level. The disk-surface was sunken and the nerve had become greenish-gray in tint to the temporal side. A spontaneous beaded current was visible in the upper nasal vein. On the disk there appeared to be a small, though well-pronounced aneurismal dilatation of the central artery just before its primary retinal bifurcation. This arterial enlargement could be thrown into a violently pulsating mass by artificial pressure. The arterial currents, though narrow, could not be broken by any degree of pressure that was compatible with visibility of the eye-ground. The perivascular thickenings and opacifications of the lymph-sheath walls seemed to have become perceptibly broader and denser during the time that the patient was under observation.

Careful attention to the general condition of the patient, the best of hygienic care, and entire rest to the eyes, kept him perfectly comfortable until the 16th of September of the same year, when he returned with the statement of immediate loss of sight and sudden pain in and around the same eye upon the previous day. He was now in a state of acute hemorrhagic glaucoma. Numerous hemorrhages into the vitreous chamber hiding the entire fundus could be seen through the semidilated pupil. The cornea was anæsthetic, and there was marked increase of intra-ocular tension. The eye appeared to be absolutely blind. Eserine, localized heat, and morphine, with immediate recourse to enucleation should iridectomy fail to relieve the neuralgia, were ordered and agreed to.

Two days later, there being sufficient anterior chamber though the eye remaining quite hard, a broad, clean-cut iridectomy was safely accomplished without any accident or apparent rupture of blood-vessel by a bent keratome; precaution being taken to remove the instrument slowly and deliberately so as to allow a gradual escape of the aqueous humor.

The wound healed rapidly, the pain immediately ameliorated, and tension fell to normal. This continued for six weeks, when, without apparent increase of tension, a slight but fresh hemorrhage was found in the anterior chamber, only to daily increase, causing the eye to grow more and more painful until the 20th of the month, when, after the greatest persuasion, the patient was finally induced to be relieved of the painful and irritating organ by an enucleation.

Exercising the greatest care of the patient's general health, which unfortunately has become more and more shattered, until now he has been compelled to abandon all active pursuits, and to rest and be cared for both

at the seashore in summer and at his own home during the winter months, the left eye, which has been seen within a few weeks, has been kept in excellent working condition.

The specimen was carefully prepared and cut into a series of sections by Dr. Mary Morey, of Philadelphia. Examination of this showed in a great number of irregularly broken and unsequentially mounted sections, all the evidences of old perivasculitis and retinal disintegration mostly limited to the inner layers at the posterior pole and around the optic nerve entrance. No thrombotic or embolic remains could be found, though carefully searched for over many specimens. Sequelæ of both old and new hemorrhagic extravasations were found both in the larger cavities and thrust in between the more compact tissues. The ciliary bodies, folds, and muscles were markedly engorged, and the remnants of loose fresh blood-clots in and around the vessels could be seen. The angle of the chamber seemed to be open though choked, as in the second case, with pigment *débris* and pigment corpuscles. The colobomatous edges of the iris were clean, though laden with pigment. The iris stump, as far as could be determined by the association of several small pieces of separately mounted contiguous tissue, was quite short and evenly edged. The corneal wound was coapted throughout, without any apparent overriding of its extremities, and the track of the incision was smooth and even.

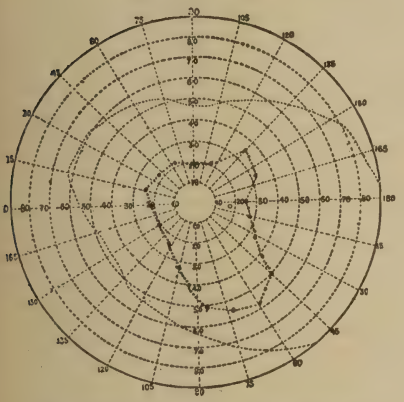
The second case is of much greater clinical interest.

On the 9th of March, 1892, through the recommendation of my friend Dr. George H. Halberstadt, of Pottsville, Pennsylvania, H. McG., an apparently healthy man, without any family history of eye-trouble, came to my service at Wills' Eye Hospital. The patient, aged forty years, an engineer by occupation, stated that the sight of the left eye had been gradually growing increasingly "misty" for three years' time, this being accompanied by attacks of inflammation and pain in and around the organ. A slowly-increasing failure of the right vision, which had become primarily noticeable in December of 1891, and which, in spite of both local and general medication, had been associated with intense localized neuralgias, especially in the temporal region, had caused his physician to seek for further advice. At the time of the examination, both corneæ were hazy and quite anæsthetic, with a few fine deep-seated infiltration-areas. The iris-tissue appeared degenerate and discolored. Both pupils were irregularly dilated. The media in the right eye were so hazy that it was impossible to obtain any view of the fundus, either with the direct or with the indirect image, whilst the ground of the left eye could be but dimly seen, showing a deeply-cupped disk. Intra-ocular tension was markedly increased, this being the more pronounced in the right eye. There was intense engorgement of the episcleral veins, giving the globes a bluish-purple tint. The anterior chambers were almost annihilated. Vision was reduced to perception of light in the area shown in the sketch No. 7. The left eye was absolutely blind.

As the patient stated that he could plainly differentiate large objects with the right eye up to within a few days, and as the necessities for prompt radical interference seemed so urgent, an immediate broad upward iridectomy was made, without any unfavorable complication except a slight oozing of blood from the enlarged vessels of the iris stroma. Next day the wound had healed.

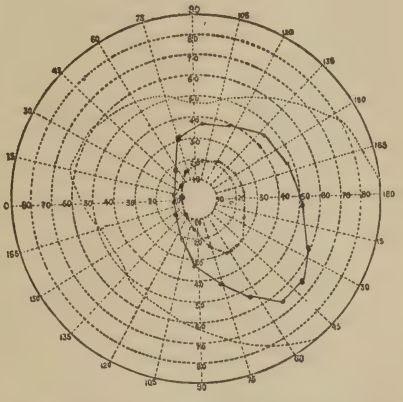
Forty-eight hours later, the eye was perfectly quiet. There was a large, broad, clean-cut peripheral coloboma. The cornea was much clearer, the anterior chamber was re-established, and the hemorrhage had almost disappeared. The patient could readily count fingers at six metres' distance, and voluntarily asserted that his field of vision had become larger. Pain had almost gone, and he was enabled to enjoy his night's rest.

FIG. 7.



Right candle-field when patient first seen.

FIG. 8.



Right white and red fields after first iridectomy.

Both the local and general conditions steadily improved under appropriate treatment until the 25th of the month, when he was enabled to see the fifty diopter type at one metre's distance, and he had regained the fields taken on the 11th of the month, as shown in Fig. 8. Intra-ocular tension had now fallen to normal.

On the 18th of April, with a central vision of $\frac{2}{50}$ which could not be bettered by lenses, a large central field for red and white, no pain, and a quiet, properly-toned eye, he was sent back to his physician with directions for the local employment of eserine, etc.

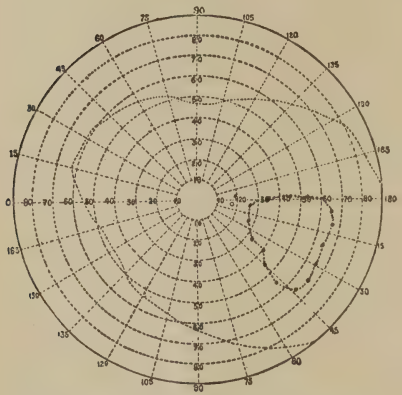
Under this treatment he did well all summer. In the early fall, however, he found that the right vision began again to persistently fail until he was only able to distinguish light.

On the 16th of November of the same year, he was again brought to the hospital. The appearance of the eyes had materially changed. Though still blind in the left eye, the right field of vision was reduced, as shown in Fig. 9, to a small heart-shaped area of faint light-perception in the lower outer periphery. The left pupil was irregularly dilated to at least seven

millimetres' width in its longest diameter. The episcleral veins were engorged. The lens had become partially opaque and greenish in tint. The iris tissue continued degenerate and the corneal haze seemed to be the greatest slightly down and in from the summit of the membrane. Intra-ocular tension had become raised to + 1, that of the right eye seeming to be slightly supernormal. The large artificial colobomatous area remained free up to the periphery, but the lower portion of the iris appeared to be attached by a rather broad posterior synechia to the anterior capsule of the lens just below its centre. The lens itself was milky white and somewhat swollen. Little or no anterior chamber existed.

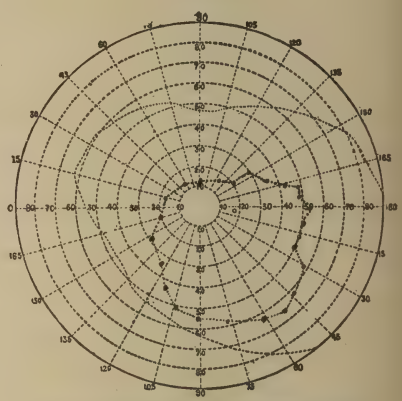
After consultation, an anæsthetic was administered and a diametrically-placed broad and free iridectomy without injury to the lens was readily

FIG. 9.



Right candle-field before second iridectomy.

FIG. 10.



Right candle-field after second iridectomy.

obtained by means of a bent keratome. As before, there was some oozing of blood into the anterior chamber from the iris tissue. Eserine was instilled immediately after the operation. In less than two days' time, the wound had perfectly closed, the hypemia had disappeared, and the anterior chamber was restored. The lower coloboma was clear and broad, extending directly up to the lower inner angle of the chamber. This, with some broken remnants of a few synechia upon the anterior capsule of the lens with the original iridectomized area, made a broad hour-glass-like pupil. The lens was undisturbed and intra-ocular tension had fallen to normal.

One week after the operation, the patient could count fingers at twenty centimetres' distance, and the field of light-perception, which included the fixation object, was enlarged to the size shown in Fig. 10. Intra-ocular tension remained normal.

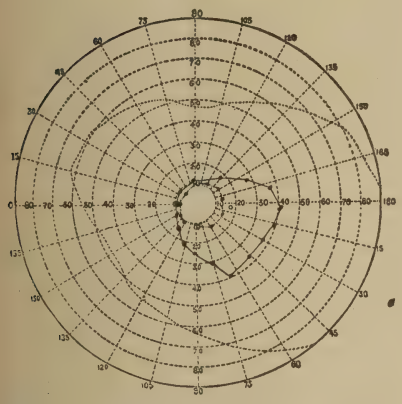
In consultation with Dr. Norris, it was then decided to wait a few weeks, to continue the local and general treatment, and to endeavor to extract the right lens. This was done on the 15th of February, 1893, without any difficulty, whilst the patient was under the influence of a general

anæsthetic. The drug (ether), curious to state, even at the time of the patient's most profound insensibility and, in fact, during the entire operation, seemed to set his entire muscular apparatus, including the extra-ocular groupings, into a series of gross and rapid clonicisms, which made some of the steps of the operative procedure rather awkward of performance. During this condition, after free capsular division, the lens was delivered safely and completely, without the loss of any vitreous, through a superiorly-situated broad corneal incison; the synechia giving way without any trouble. Neither primary nor seconary hemorrhage took place.

The recovery from the operation was uneventful. In five days' time, the pupil was clear throughout the large upper coloboma and in most of the smaller lower one. After various changes in the degree of both central and peripheral vision, showing $\frac{3}{50}$, by the use of a + S. 10. D. ⌒ + C. 2.50 D. ax. 180°, a series of form and color fields (the one here chosen (Fig. 11) taken nine days after the operation) were obtained, which again embraced central fixation.

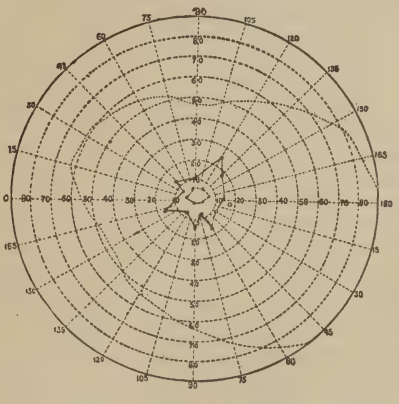
With the above correction, the picture of a deep and an almost complete glaucomatous cupping with a marked green-gray degeneration of the optic-

Fig. 11.



Right white and red fields after extraction of lens.

Fig. 12.



Right white and red fields.

nerve-head tissues, and marks of old blood extravasation into the deeper-lying tissues of the retina, with diminution of retinal vessel calibre, could be plainly seen.

Eight months later, after a quiet and comfortable summer, during which time the patient voluntarily more or less discontinued the use of eserine, he returned with the statement that his blind eye had become suddenly painful a few days previously, and that he desired its removal. Examination showed a stony-hard globe that was almost violaceous in tint, the shallowed anterior chamber being half filled with freshly extravasated blood. The next day, enucleation was done under ether, the patient having the same peculiar muscle-tremor as before. Vision in the right eye taken by

a different chart, and practically under the same conditions as before, had now increased to nearly $\frac{4}{50}$. The eye was quiet and the field of vision, though slightly more irregular in outline, remained central and about the same size as before.

The patient was lost sight of until one month ago, when through the kindness of Dr. Wendell Reber, of Pottsville, one of my former assistants at the hospital, into whose hands the patient fell, he was again referred to me to decide whether any further operative measure might be necessary.

A consultation with Drs. Norris and Harlan decided in the negative. At that time, his local condition was practically unchanged. The fields of vision, charts of which were carefully taken by Dr. Reber, but which unfortunately have been misplaced, presented a much greater diminution in area, with quite a zigzag periphery, though here as before central fixation was preserved as when taken in November last. This is well shown in Fig. 12, which is a copy of the field as taken at this time by one of my assistants, Dr. Krause. The intra-ocular tension was normal and the eye was painless.

After the specimen had been properly hardened and cleaned by Dr. Samuel S. Kneass, of Philadelphia, Adjunct Professor of Bacteriology in the Philadelphia Polyclinic, antero-posterior sections through the median horizontal plane, so as to include the optic-nerve entrance, were carefully cut by him. Here, the corneal tissue does not seem to be involved, there being but a few pigment depositions on the endothelial layer, these being most marked to the temporal side and thickest and densest in the angle,—at which place there are the remains of a few blood-corpuscles. The temporal side of the iris is slightly infiltrated, especially towards its base, at which point there is a broad line of blood pigment and scattered blood-corpuscles. The nasal portion of the iris is similarly studded with pigment deposits. Between the ciliary bodies and the posterior angle there is a large aggregation of blood-corpuscles, many of these being adherent to the uveal pigment. In the ciliary folds there are similar fresh hemorrhagic extravasations. The ciliary muscle is rather long and wedge-shaped, somewhat similar to that found in emmetropia. In the body of the muscle itself and in the overlying sclerotic, there are numerous engorged blood-vessels. In the region of the ora serrata there are numerous blood-corpuscles situated on the retinal tissue next to the vitreous. The larger retinal vessels themselves are engorged with blood. In many instances, the surrounding lymph-channel walls are thickened and the lymph-spaces are enormously dilated at places and engorged with pigment *débris*.

Between the limiting membrane of the retina and the inner granular layer, there are numerous alveoli; these, which increase in size and become more and more aggregated as they approach the nerve-head, break through the internal nuclear layer at points and distribute the nuclei between them. Near the disk, the innermost layer of the retina turns in towards the vitreous

to turn abruptly back again. The retinal fibres themselves at this point are forced out against the choroid and the sclerotic to again incurve and pass into an enlarged degenerate mass representing the nerve-head, where they are soon lost in the degenerate tissue. A second projecting mass of nerve-fibres, passing more deeply into the nerve-head tissue, also turns abruptly backward and is lost. A third, though somewhat smaller portion, passes directly backward without much distortion and interruption. The involution of the second series corresponds in position with a depression in the summit of the enlarged nerve-head. The temporal fibres of the retina thus irregularly squeezed into an extremely narrow area, produce a small external depression which mainly affects the external and the bacillary layers of the membrane. These two series of projections tend to produce a large triangular area in the temporal portion of the enlarged nerve-head mass.

The fibres to the nasal side of the retina seem more compact and are less degenerate until they reach the nerve-head, at which point a few are allowed to pass irregularly into the tissue of the nerve-head itself. These, which are at the extreme edge, pass outward far into the optic nerve as a narrow wedge.

The entire intervening portion of the nerve-head, between the temporal and the nasal series, is occupied by a grouping of irregular whorls and cavities that are densely pigmented in places, and at the centre show the remains of the central artery of the retina.

In the central and most degenerate portion of the optic nerve itself, numerous hemorrhagic areas are distributed.

Remarks.—These brief histories and the results of the post-mortem findings have not only been of great interest to the writer, but have served to teach him a most important lesson. With this latter fact in view, he has brought them before the Society, hoping by the striking contrast between the two cases to offer an extremely rare type of the disease, in which some hope may be vouchsafed to the patient for deferring at least the almost universal fatal issue.

The first, a well-cared-for though dissipated man, suffering from grave nerve-disease, suddenly evidences a right-sided thrombotic and embolic process in an eye that has evidently been the subject of retinal hemorrhage, and already shown signs of increased intra-ocular pressure. In him, we find a victim of pronounced vascular disease, both cardiac and peripheral, in whom the renewed breakages of vessel-wall and the consequent extravasation of blood have been most sudden and violent. Here, each hemorrhage, as shown by the specimens, did not confine itself to the larger lymph-stream channels, but actually forced its way into the interstices of important nerve and nutrient structures. Here, the disastrous pressure with probable disintegration of contiguous tissue by the presence of disorganizing and possibly irritating blood and lymph material, soon rendered the structures of the organ not

only increasingly weaker in their physiological acts, but progressively less able to cope with the constantly-augmenting vascular disorder.

Unable at last to withstand the exquisite neuralgia, which was temporarily relieved by a carefully-performed and uncomplicated iridectomy, the entire nidus of pain had to be removed for both the patient's comfort and safety.

How different, however, is the second case. Here, an apparently healthy middle-aged man, without any other evidences of gross organic vascular lesion or general disturbance of the secretory or excretory system, gradually develops, during the course of three years' time, a comparatively painful blindness in the left eye, with an almost complete annihilation of vision on the more neuralgic right side. Brought to necessary operation by an acute exacerbation of pain, the procedure is safely accomplished upon a degenerate and, fortunately, probably but slightly vascular tissue, from which there was but little hemorrhage. Relieved for several months' time, another attack with its necessary accompaniment of lowered functional power only appeared as the result of indiscretion. By a similar uncomplicated operation, again the process was checked, care being taken this time to keep the patient's general regimen, diet, etc., under the strictest surveillance. The eye then being quiet and all visible hemorrhage having been absorbed, the last hope for useful sight was given to him by the extraction of a cataractous and swollen lens. Safely accomplished, with no accident of any nature, central vision was brought to a higher acuity than during the entire time that he was seen. This degree of visual power has been held in an eye whose tonus is seldom, if ever, above normal; an eye, however, that too surely is showing the slow, steady, and irregular contraction of the field, as seen in the increasing pathological excavation of simple and chronic glaucoma.

The question may be asked, and properly too: Does the second case strictly belong to the category of secondary glaucoma dependent upon intra-ocular hemorrhagic extravasations? That it does can hardly be doubted when it is considered not only that distinctive marks of past retinal hemorrhage could be seen in the right eye after the media had become clearer and the opaque lens had been removed, but that the method of termination of the fellow blind eye was occasioned by a marked intra-ocular hemorrhage. Again, the microscopical study of the enucleated organ, where not only loose hemorrhagic aggregations in the large fluid cavities and vascular infarcta in the tunics of the organ could be seen, but where clump-like masses were to be found interposed throughout the interstices of the more loosely-meshed portions of the ocular coats, furnishes similar evidence. Further, the pictures of vessel-wall thickening and commencing disintegration, both point towards chronic vascular disturbance.

The comparative youth of the patient, however; the relatively better condition of the vascular coats in this case as compared with that of the more advanced stage of the disease in the other older subject; the method

pursued during the operative interference; and the careful regimen instituted whilst the patient was under control, all show why here the local disease has been so long stayed in its downward progress.[1]

Unfortunately, as a rule, the generality of such cases are seen when the vascular degeneration is more advanced and the ocular tissues are more congested. Here any form of operative interference, when vascular structure is divided, is dangerous, and recuperation from the most successful procedure is at times apt to be slow and tedious.

That a few rare examples do exist where the usual function may be usefully prolonged for varying periods of time, there can, from the teachings of the second case, be but little doubt.

As expressive of this almost isolated grouping,[2] the conclusion resolves itself into the fact that in some extremely rare case of glaucoma that is secondary to slight recurrent attacks of intra-ocular hemorrhage, especially in young and comparatively sthenic subjects in whom the vascular system is not greatly involved, the organ may be kept for much longer periods of time than ordinary in such cases in a condition of usefulness by appropriate hygienic and general therapeutic measures; care being taken to slowly perform operative procedures whenever there is urgent necessity to relieve

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[1] The same question may be as consistently asked of the first case. Here most observers, with much less study and without post-mortem verification, could have easily asserted from the first clinical findings and the later history of the case with its fatality, that it belonged to the category of glaucoma that is secondary to retinal hemorrhage; but how, in the absence of any certain traces of past disturbance, could it be certain that the retinal hemorrhages preceded the glaucomatic process, except that absolute dependence be placed upon the patient's assertion in giving but one of the characteristic subjective expressions of previons retinal extravasation? So, in most of the recorded instances, there has been an element of uncertainty as to which was the initiative factor. The first stages of so-called glaucoma are so complex, so evanescent, and in many instances so unlike the latter degenerative ones, that many observers might be led astray and deny the presence of the glaucomatic process. In reality, the main question simply resolves itself into the compensatory powers of the globe in its resistance to a certain morbific process. Granted that this process practically consists in a primary disturbance in the vascular system from disordered nutrition with extravasation of a foreign and irritative substance into the contiguous delicate structure of the eye, the work of mischief to the free circulation of the intra-ocular fluids has begun. Each attack, proportionately greater by reason of increasing vascular trouble and diminished resistant force of the gradually weakening ocular structures, at last allows as one of the most important and terrible results, the soft neural tissues at the posterior pole of the eye to lose their vitality and thus to render the organ hopelessly blind. Still continuing, ruptures of vessel structure in a more and more degenerate organ in association with all the pathological changes that are produced by tissue cicatrization continue and at last produce such violent outbursts of pain that finally it becomes absolutely necessary to remove the organ.

[2] Out of some eight thousand cases of eye-disease personally seen by the writer, in both public and private practice, during the past four years, this is the only one out of eight that have been confirmed by autopsy, where the patient (this the youngest of all in the series) so persistently retained this modicum of vision.

increased intra-ocular pressure by rendering patulous the most important outlets for the intra-ocular fluids.[1]

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[1] Since writing this paper, Dr. George E. de Schweinitz has kindly given me the following history of a most interesting and instructive case in the person of J. M., aged fifty-seven, residing in Newark, Delaware. The patient, who was a native of America, applied for treatment on the 8th of April, 1893, with the following history: He is a night-watchman, losing much sleep. Has always had trouble with the left eye, owing to obstruction of the lachrymal duct, which was opened eighteen years ago, but from which a slight purulent discharge has never ceased to flow. Five weeks ago he noticed a red spot before this eye, which gradually increased in size, and was followed by violent pain. Consultation at that time with some one in his own neighborhood is said to have shown hemorrhages in the retina. The violent pain in the eye increased and was succeeded by inflammation, and in about five days the sight is said to have entirely disappeared. He has had various drops for his eyes, and within the last few days has been using a solution of eserine prescribed by Dr. William F. Norris at Wills' Hospital. He is a short, rather dark-skinned man, with grayish hair, of reasonably good habits, and without severe illness since his youth, except chronic dyspepsia. He has had rheumatism, but never severely. The arteries are perhaps a little stiffer than normal at his age of life, and the facial and neck veins somewhat turgid. There is no cardiac murmur. The urine is practically normal, the specific gravity being, however, rather high, 1030; no albumin, no sugar, no casts, and no sediment of importance.

Right Eye.—The pupil is small, the anterior chamber normal, the lens strongly reflecting, the disk an irregular vertical oval of good color, without cup, the nasal edges of the disk being veiled. The general fundus of good condition, and the retinal vessels of normal size and carrying normally-tinted blood. V = $\frac{6}{6}$ with 1. D.

Left Eye.—No reflex from the fundus; the anterior chamber shallow but not obliterated; the cornea steamy; the iris atrophic, discolored, its stromal vessels enlarged, and the pupillary margin firmly bound to the lens capsule. There is intense injection of the eyeball and a special violaceous color depending upon the congested perforating and non-perforating episcleral veins. There was practically no perception of light, except a faint shimmer detected in the lower and outer quadrant when a ray was condensed upon this portion of the eye with a two-inch lens. T. + 2. The field of the opposite eye was entirely normal.

The patient was treated by the local application of eserine and cocaine, free leeching from the temple, iodide and bromide of potassium, full doses of chloral, ergot, and hop compresses, and up to the 20th of the month was remarkably relieved. Then the pain was renewed, the tension which had somewhat diminished became + 3, and the pain was so excruciating that the patient begged for enucleation. This was performed on the 24th of the month without accident, except that there was a good deal of ecchymosis of the cellular tissue of the lids for several days after the removal of the eyeball. One month later an artificial eye was ordered, and there has never been any trouble since, so far as known.

Microscopic specimens of the eye presented the following lesions: Numerous hemorrhages in the deeper retinal layers and small, irregularly-disturbed ones in other parts of the tunics. Iritic angle closed and infiltrated. Nerve-head shrunken and excavated. Retinal tissue degenerated in many places, and the middle third of the iris markedly atrophic.

TREATMENT OF PLACENTA PRÆVIA.[1]

BY J. ALGERNON TEMPLE, M.D., M.C., M.R.C.S. (Eng.),

Professor of Obstetrics and Gynæcology, Trinity Medical College, Toronto; Gynæcologist, Toronto General Hospital.

In looking over the literature of placenta prævia, it may not be uninteresting to make a few selections from some of the former prominent writers on the subject, as a matter of comparison, in order to see what progress we have made.

In 1733, Chapman, writing upon placenta prævia, recommends that on the first attack of hemorrhage the woman should be at once delivered by art, as her future progress in gestation is accompanied by great risk to herself.

Pagog advises that gestation should not be interfered with by art, but that we should always wait for the natural labor pains, which, he goes on to remark, will put a safe end to the gestation.

Rigby, writing in 1789, says that hemorrhage occurring in the early months of gestation is not serious to the woman; he considers interference with gestation to be unnecessary, and in another place he remarks: "Were it even necessary to interfere with gestation, I cannot conceive it possible even how to do so." Rigby did not believe, then, in the original fixation of the placenta at the os uteri; but that when found there it was the result of an accident which had caused its dislodgement from its original site at the fundus, and that it had fallen or gradually slipped to the lower end of the uterus, and there formed new attachments for itself. In support of this theory he quotes Mauriceau, Portal, Tahiote, Dioriss, Ruysch, Deventu, Jeffard, and others.

Smellie appears to have been the first author to admit the possibility of placenta prævia as a primary occurrence. In dealing with the treatment of hemorrhage he recommends the entire separation of the placenta, the rupture of the membranes, and the delivery of the placenta first. This treatment for many years fell into disuse, but was revived by the late Sir J. Y. Simpson, though there are some who credit him with being the originator of this plan of treatment. As early as 1776, Teroux advocated that in those cases of hemorrhage occurring with placenta prævia, and the os uteri being undilated, the vagina should be firmly packed with tampons of lint soaked in vinegar. The famous Blundell, writing in 1815, says that hemorrhage in placenta prævia usually occurs between the seventh and eighth month; that in such cases, when the os uteri is dilated, the best plan in the

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[1] Subject selected by the writer for discussion in the meeting devoted to obstetrics of the Ontario Medical Association, held at Toronto, June 6, 1894.

interest of both mother and child is to turn; and when not dilated, to wait till it attains the size of half a crown, and then to turn; and when the os uteri is too rigid for the safe passage of the hand to turn, to puncture the membranes through the placenta, being very careful not to detach it. Again, in central placenta prævia he recommended the perforation of the placenta through the centre rather than its lateral detachment.

Dewees, in 1837, advises before dilatation of the os uteri rest in bed, and if the pulse be strong and full, a free general bleeding from the arm and the internal administration of large doses of acetate of lead, and cold applications to the vulva and lower part of the abdomen, and also rectal injections of one-half ounce of acetate of lead every hour to promote coagulation of the blood. Tiok recommended cold astringent vaginal injections, and vaginal tampons of lint soaked in alum or wine and alum.

Such is a brief outline of the treatment adopted during the past one hundred years. This brings us now to the consideration of the treatment as practised in our own time.

Of all the men who have written upon this important subject, I think we are most indebted to Robert Barnes for the introduction of the plan of separating the placenta from the lower cervical zone of the uterus, or, as he calls it, the unsafe attachment of the placenta. Also to Braxton Hicks, who taught us how to perform version by the bipolar method before the dilatation of the cervix. These two methods have done more to reduce maternal and fœtal mortality than any one plan of treatment.

In treating a case of placenta prævia, the very first question that forces itself upon us is to decide as to the advisability or otherwise of endeavoring to prolong gestation. Undoubtedly in all cases of labor it is the duty of the accoucheur to endeavor, if possible, not only to save the mother's life but also to give every chance to the child. I must admit that in all cases where both the mother's and child's life are in danger, I give the greatest chance to the mother, as I consider her life of far more importance than that of the unborn child. The question is one of the greatest importance, and one that deserves the most careful consideration at the hands of the attending physician. The line of treatment best to be adopted is not altogether a settled one: there are some who advise the immediate termination of the gestation on account of the real risk to the mother's life; and there are others who advise temporizing in the interests of the child.

I do not think any absolute hard-and-fast rule can be laid down; each case may possibly present some peculiar feature, calling for some special line of treatment. At the same time, I think the weight of evidence is in favor of the termination of the gestation when the first attack of hemorrhage, especially if it be a severe one, occurs before the seventh month, for the following reasons:

First. The supposition is in favor of the placenta being centrally transplanted when the first attack of flooding is severe and prior to the seventh month.

Second. The tendency of all such cases is of themselves to end in abortion and consequent death of the child.

Third. When the hemorrhage occurs, even in the latter half of gestation, the tendency is towards abortion. It is estimated that only one-third of all such cases reach the end of gestation.

Fourth. The liability to a recurrence of the hemorrhage at any moment is very great; consequently the woman's life is hourly in danger.

These are all weighty arguments against prolongation of the gestation. The great fatality from placenta prævia is in the occurrence of sudden severe hemorrhage in the absence of the physician. The first attack is usually slight, but it should be taken as a serious warning to us of the possibility of the next attack being very severe, if not a fatal one, before assistance can be got. The occurrence of hemorrhage in the early months of gestation so reduces the chances of saving the child's life that I do not think its welfare ought to be considered at all alongside that of the mother. I certainly believe that the wisdom of prolongation of gestation is open to serious question. Should the first attack of hemorrhage occur after the viable period of the child, then I do not think there should be any hesitation in the mind of the physician as to what he should do for his patient, as I am thoroughly satisfied from my own experience that the correct thing to do is to terminate the gestation as soon as possible. By so doing the child and mother both have a much better chance of ultimate recovery. To delay is to increase both maternal and fœtal mortality. On this point let me here quote the words of Robert Barnes: "If the pregnancy have advanced beyond the seventh month, it will, as a general rule, I think, be wise to proceed to delivery, for the next hemorrhage may be fatal. We cannot tell the time or extent of its occurrence, and when it occurs, all, perhaps, that we shall have the opportunity of doing will be to regret that we did not act when we had the chance."

These are very significant words from a man of vast and varied experience. The few cases where it may be deemed advisable to prolong gestation in the interests of the child should present some, if not all, of the following features:

1. That the woman be very near the seventh month of pregnancy.
2. That the first attack of hemorrhage be but a slight one.
3. That the placenta be but laterally implanted.
4. That the woman be within easy reach of medical assistance.

Under such conditions the patient should be put to bed, kept absolutely quiet, free from all surrounding excitement, and possibly given an occasional dose of opium.

I do not think there is any virtue in the so-called astringents, such as acetate of lead, gallic acid, etc. My own practice is not, even under such circumstance, to advise the attempted prolongation of pregnancy; the risks to the mother are too great, and the chances of saving the child's life too small. Presuming the case to be one occurring after the seventh month,

the attack of hemorrhage to be a severe one, and the cervix undilated, delivery should be accomplished as soon as possible. For this purpose I would advise that the membranes be ruptured; this allows the uterus to contract, and will of itself frequently be sufficient to check further loss of blood. The objections raised against this plan of treatment are that the normal means for dilating the cervix is removed, and that the chances against the child's living are increased. Still it is the quickest way of securing rapid contraction and thus stopping further loss of blood. If the flooding continues and the os is not sufficiently dilated to admit of version readily, and especially if the patient is much exhausted, and not in a fit state to admit of version, the next best step is to separate the placenta by the finger from around the cervix as far as the finger will reach, as recommended by Robert Barnes. This, as a rule, answers promptly. It checks the flooding and it also favors dilation of the cervix, for so long as the placenta retains its attachments to the lower zone of the uterus the cervix will not readily dilate. The internal administration of ergot may be resorted to from the first.

In the event of these means failing, and if the flooding still continues, while the cervix is still not dilated so as to admit of version, plugging the vagina firmly with antiseptic tampons should be resorted to. Before plugging, the vagina should be carefully syringed out with an antiseptic lotion; this method, if properly applied, is very efficient. The plugs, however, must be carefully inserted, one after another; the first one should be placed within the cervix itself, and then the others in rotation till the vagina is perfectly full. The plugs may be made of clean strips of cotton or wool previously soaked in some antiseptic solution. On no occasion should a sponge be used which has been in use in the house for other purposes. After the vagina has been carefully packed a firm pad should be placed over the uterus and the whole kept in position by a carefully-applied bandage. The tampons should not be left in longer than six or eight hours, and when removed the vagina should again be syringed out.

Lastly, if on removal of the plugs the os be found sufficiently dilated to perform version, and the woman herself be in a fit state for the operation, it should be done. The bipolar method being used if possible, the leg of the child when brought down will both form an efficient plug and further assist in dilating the cervix. The operation of version by the bipolar method may be undertaken at any time in the course of the treatment whenever the cervix will permit of it.

In Berlin it is claimed that by this method of treatment the mortality has been reduced to four and one-half per cent. of women and sixty per cent. of children,—a marvellous reduction as compared with what it used to be.

A REPORT OF ELEVEN CASES OF INTUBATION OF THE LARYNX IN DENVER, COLORADO, WITH EXHIBITION OF SAMPLES FOR THE SUBLIMATION OF CALOMEL.[1]

BY F. E. WAXHAM, M.D.,

Emeritus Professor of Laryngology and Rhinology, College of Physicians and Surgeons of Chicago, Denver, Col.

THROUGH the courtesy of my *confrères* I have operated eleven times for diphtheritic stenosis of the larynx during the past year. As these cases present some interesting features, I take the liberty of reporting them:

CASE I.—This case was seen through the courtesy of Dr. Clough and Dr. Walker, October 2, 1893. The patient was a little girl of nine years, suffering with well-marked symptoms of diphtheria with laryngeal invasion. She had been sick for several days when the gradually-increasing obstruction of the larynx rendered an operation imperative. The voice and cough had become suppressed and the respiration greatly embarrassed. Intubation was at once performed, with immediate relief to all the urgent symptoms. The tube was worn eight days, and the patient made a most satisfactory recovery. Another child in the family subsequently developed an attack of pharyngeal diphtheria.

CASE II.—October 24 I was called by Dr. Wilson to operate upon an Italian baby of eighteen months, suffering from pharyngeal and laryngeal diphtheria. The child was in imminent danger of suffocation, presenting all the characteristic symptoms. Intubation gave the usual relief, but the respiration soon became rapid, and the child died six hours later with evidence of extension of the diphtheritic membrane into the finer bronchi.

CASE III.—Through the courtesy of Dr. Clough I was called into the country, October 27, to operate upon a boy of seven years. The case was malignant, and little hope of recovery was entertained from an operation. The boy was greatly exhausted, not only from the severity of the disease, but also by the great difficulty of breathing. The operation gave great relief to the urgent dyspnœa, and the patient returned to consciousness, but the pulse remained rapid and feeble, and the case terminated fatally twenty-four hours later.

CASE IV.—December 19, Dr. Carlin called me to operate upon a boy three years old, suffering from semi-malignant diphtheria of the nasal cavities, pharynx, and larynx. Relief was obtained from the difficult breathing, but the patient died from exhaustion thirty-six hours after the operation.

CASE V.—I was called by Drs. Rogers and Shotwell to operate upon a patient of three years. The child was laboring desperately for breath, and certainly could not have lived through the night. The usual relief was obtained, and the patient made a good recovery after wearing the tube eight days. There were four other cases of diphtheria in the family, all of whom recovered, although the cases were severe and the surroundings very unfavorable.

CASE VI.—February 16 I was called by Drs. Rothwell and Boyington to operate upon a boy four years old. Great relief was obtained from the operation. The tube, however, was expelled soon after our departure, but on account of the ignorance and

[1] Read before the Colorado State Medical Society, June, 1894. This article has also been contributed to the Denver Medical Times.

prejudice of the family, which could not be overcome, the tube was not allowed to be reintroduced, and the patient died from suffocation a few hours later.

CASE VII.—Through the courtesy of Drs. Carlin and Shepherd I was called, February 20, to operate upon a boy of four years. No membrane could be observed in the pharynx, but the patient was nevertheless dying from suffocation due to membranous obstruction of the larynx. The usual relief was obtained, but the patient died forty-eight hours after the operation from extension of the membrane to the bronchi. Other cases of diphtheria subsequently occurred in the house, showing this to be a case of laryngeal diphtheria.

CASE VIII.—March 25, Dr. Carlin called me to operate upon a baby sixteen months old, suffering from pharyngeal and laryngeal diphtheria, which later extended to the nasal cavities. The little patient made a perfect recovery after having worn the tube twelve days.

CASE IX.—March 25, was called by Dr. Charlotte Hawk to operate upon a baby of twenty months, dying from suffocation due to laryngeal obstruction. This patient likewise recovered after wearing the tube three days.

CASE X.—March 26, Dr. C. B. Richmond kindly called me to operate upon a baby twenty months old. In this case there was a membranous exudation upon the fauces which had extended into the larynx and which accompanied an attack of measles. There was marked pulmonary congestion, and the operation only gave partial relief, the respiration remaining very rapid and shallow, and the patient dying twenty-four hours later.

CASE XI.—April 7 I was called, through the courtesy of Dr. Shotwell, to see a boy thirteen years old. The boy was suffering from a severe attack of measles, and complicating it what appeared to be a catarrhal laryngitis. The voice was hoarse, and the cough croupy, and while the respiration was somewhat embarrassed the symptoms were not so urgent as to call for an operation. It was decided to wait a few hours and watch the result of treatment. Three hours later I received a very urgent message from Dr. Shotwell to come with all possible haste, as the boy was dying from suffocation, and it was possible for him to live but a few minutes. Upon arrival he was found to be unconscious, the extremities cold, and the pulse small and thready. The operation was quickly performed, and the patient soon restored to consciousness. During the night the tube was expelled, and a larger one was introduced. The next morning the membrane was observed for the first time upon the walls of the pharynx. The boy did well for two days, but increasing frequency of the respiration and a peculiar obstructive cough indicated extension of membrane below the tube. The tube was consequently removed, when the membrane rolled up in the trachea, and respiration was almost impossible. The patient could not expel the mass, as it was still adherent. The tube was reintroduced and removed several times in the hope of detaching it. All efforts in this direction proving futile, tracheotomy was performed. A membranous cast of the trachea, and even of the bronchi to the second and third divisions, was removed by means of the forceps introduced through the tracheotomy wound.

A tracheotomy tube was then introduced, and all the urgent symptoms relieved.

Within twenty-four hours, however, the respiration became rapid, and the boy died thirty-six hours later from the reformation and extension of the membrane.

To recapitulate, omitting Case VI., in which the tube was not allowed to be reintroduced after having been expelled, we have had ten cases with four recoveries, or forty per cent. Of these cases, one was nine years old, with one recovery; one was eighteen months old, with no recovery; one was seven years old, with no recovery; two were three years old, with one recov-

ery; one was four years old, with no recovery; one was sixteen months old, with one recovery; two were twenty months old, with one recovery; one was thirteen years old, with no recovery. Total, ten cases, with four recoveries.

These ten cases added to the four hundred and sixty-six cases reported one year ago give a total of four hundred and seventy-six cases coming under my care, with one hundred and sixty-five recoveries, or 34.66 per cent.

In this connection, I take pleasure in presenting Ermold's lamp for the sublimation of calomel in the treatment of laryngeal diphtheria. This lamp was constructed for this special purpose, and presents many advantages. The metallic chimney, the long funnel for the wick, the asbestos packing, and the shape of the lamp prevent accidents from fire. The lamp is partly filled with alcohol, the wick lighted, and the calomel (from twenty to forty grammes) placed in the cup-shaped depression at the top of the chimney. A tent is built over the child by spreading an umbrella over which a sheet is placed, or slats of wood can be placed in each corner of the crib over which a sheet can be arranged. The lamp is then placed under the tent on a book or board, or better still in a small pail or other deep kitchen utensil, or by means of the wire loop the lamp may be hung from a nail driven in the head of the bed or crib. The calomel is placed in its receptacle, and the lamp lighted. The tent is quickly filled with the fumes, which are inhaled. The precautions to be exercised in using calomel sublimations are thus briefly stated by Dr. Dillon Brown, of New York.

1. The nurses and attendants should be warned against inhaling the fumes.

2. The child's skin should be covered so that the full effect of the fumes may be confined as far as possible to the local deposits on the mucous membrane.

3. Before each sublimation the child should be given a small dose of whiskey.

4. After each sublimation the mouth should be cleansed with a mild solution of chlorate of potash.

5. If the prostration and anæmia seem to be greater than the local manifestations would account for, the amount and frequency of the calomel should be diminished, and the stimulants increased.

6. If the nasal cavities are not invaded they should be plugged with cotton.

7. It is important to use pure calomel, free from all irritating properties.

The sublimation of calomel in the treatment of diphtheria, known as the Corbin or Brooklyn method, has attained a high reputation, especially among the physicians of Brooklyn and New York. The treatment is employed both before and after tracheotomy or intubation, and it is claimed that many operations are obviated by its use. From twenty to forty grains of calomel are sublimated every one, two, or three hours, according to the

age of the child and the urgency of the case. Personally, I have not had sufficient experience to justify an opinion, but, judging from the statistics of others, I would advise that in all cases this method should be given a fair trial.

REMARKS ON THE RELATION OF RESIDUAL URINE TO VESICAL IRRITATION, ESPECIALLY IN PROSTATIQUES.

BY G. FRANK LYDSTON, M.D.,

Surgeon in Charge of the Masonic Hospital; Professor of the Surgical Diseases of the Genito-Urinary Organs and Syphilology in the Chicago College of Physicians and Surgeons; Fellow of the Chicago Academy of Medicine, etc., Chicago.

It is generally accepted that most of the symptomatic disturbances incidental to certain chronic bladder diseases, especially in cases of prostatic enlargement, are dependent upon the accumulation of residual urine. The deduction from this prevalent belief is obvious. It is supposed that the imperative and infallible indication is the removal of residual urine; consesequently, with this end in view, the average practitioner busies himself in a frantic attempt at systematic emptying of the bladder as a matter of routine in cases of prostatic disease, with the result very often that the patient's misery really begins when he falls into the hands of the surgeon. I have no intention to ignore the factor of residual urine in cases of obstruction to the urinary outflow, but I believe that certain qualifications as to its importance are necessary. I have long been impressed with the idea that residual urine *per se* is not as important a factor in genito-urinary irritation as is ordinarily believed. Indeed, I do not think that the symptoms of vesical irritation bear any relation to residual urine, at least in the early history of these cases, other than that of a coincidence. I am satisfied that in a large proportion of adult males there is always a greater or less residuum of urine remaining in the bladder after micturition. In young subjects, with a high degree of tonus of the vesical muscle, complete emptying of the bladder during the act of micturition is undoubtedly the rule. As the subject grows older what may be termed a physiological atony develops, the expulsive power of the vesical muscle is lessened, the bladder sinks lower in the pelvis, and, while it cannot be said that a distinct pouch is formed, the level of the floor of the bladder is considerably lower than that of the vesical outlet, and this, in association with the lessened degree of contractility, and the fact that the *trigonum vesicæ* has no particular action in expelling the urine, permits of a certain amount of accumulation in the *bas fond*. It is a matter of common observation that if an individual empty the bladder thoroughly and defecate immediately thereafter, he may readily expel simultaneously with the act of defecation quite a quantity of urine from the bladder, so large a quantity that it could not possibly be

attributed to trickling of urine from the ureters into the bladder during the interval following micturition and preceding the act of defecation. The older the subject the greater the accumulation of residual urine. With the sinking down of the pelvic organs incidental to senile physiological atony of the muscles forming the pelvic floor, this tendency to accumulation of residual urine is increased. If general atheroma exists, it is still further enhanced. If prostatic enlargement or other obstructions at the mouth of the bladder develop, we have the typical accumulation of residual urine characteristic of such cases. It will then be seen that there may be at varying periods of life extreme differences in the degree of accumulation of residual urine. These differences exist independently of pathological changes, and as a purely physiological condition. It is quite generally held that the vesical irritation does not appear in *prostatiques* until a certain amount of residual urine has accumulated in the *bas fond*, this residual urine being supposed to act mechanically, and to give a sensation as though the bladder had not thoroughly emptied itself. The sensation of the constant or frequent desire to urinate is attributed therefore to this accumulation of residual urine. The absurdity of this conclusion is obvious upon physiological grounds. The bladder of the old man or even of the adult at middle life is relatively much more insensitive than that of the young subject, and if a small accumulation of perfectly healthy residual urine should produce a constant desire to urinate, or a frequent desire to do so in the adult, or in the old man with enlarged prostate, why should not a physiological accumulation of urine in the bladder to a degree of moderate distention produce the same condition in young subjects with relatively hyperæsthetic bladders? If the deduction were true regarding the production of urinary irritation by the simple accumulation of residual urine, a constant desire to urinate would be perfectly physiological in every individual, for within a very short time after normal micturition, there would be a sufficient accumulation of urine in the bladder to moderately distend its walls and produce the desire to micturate. Extremely frequent micturition then would be a physiological rule in subjects of all ages and conditions. Again, the sensation of the desire to urinate is produced by the passage of urine by the false sphincter—*i.e.*, the internal sphincter of the bladder—into the posterior urethra. It is not until distention of the posterior urethra occurs under physiological conditions that the normal desire to urinate is experienced. In *prostatiques* it is necessary not only that residual urine should be present, but that this residual urine should rise to the level at which it is possible for it to pass into the posterior urethra in order that a desire to micturate should occur.

Another point worthy of consideration is that the bladder walls must be distended to approximately their full physiological capacity before the urine passes in the direction of least resistance, which is necessarily by the internal sphincter vesicæ and into the posterior urethra. It is only by such passage that the desire to urinate can result from simple pressure of the

urine. The residual urine in *prostatiques* is below the level of the internal sphincter in a part of the bladder which is relatively insensitive. But it may be argued that the symptoms which are ordinarily referred to residual urine are relieved by the passage of the catheter in *prostatiques* and the withdrawal of the residual urine. I admit that clinically this appears to be the fact. I deny that it really is so. In the first place, I do not believe that any method of catheterization will thoroughly remove the residual urine and drain the *bas fond*, and in order to prove that the relief is dependent upon mere drainage it must be shown that the catheterization completely removes the fluid. Perhaps I am too sweeping in this statement. It is possible that in some cases, with extreme care in utilizing the siphon action of a soft rubber catheter, the *bas fond* may be drained, but my experience shows that, as a rule, the bladder is not only not thoroughly drained, but irrigation with a test solution, say of the permanganate of potassium, will prove that there is not only an accumulation of residual urine in the *bas fond* but in some cases an abundant accumulation of pathological products. The urine may be siphoned from above the level of the internal vesical sphincter and appear tolerably clear, while leaving considerable accumulation of pathological urine in the *bas fond*. I have found, even after quite thorough irrigation of the bladder as a preliminary to suprapubic section, that the opening of the bladder was followed in the first instance by tolerably clear, antiseptic fluid which had been thrown into the bladder as a preliminary to cystotomy, but that if the finger were passed down into the *bas fond* through the vesical opening, and moved about as necessary for exploratory purposes, the withdrawal of the finger was followed by a gush of urine which was distinctly pathological and perhaps admixed with a large amount of muco-pus and phosphates. With the ordinary catheter, and especially with the metallic catheter with a prostatic curve, it is, in my opinion, absolutely impossible to withdraw the residual urine. The eye of the catheter can in no way be placed in such a position that the urine will be thoroughly withdrawn. If the external orifice of the catheter be elevated and the beak depressed, the residual urine will not flow. If the position of the catheter be reversed and the beak of the instrument hooked down into the *bas fond*, the bladder is so devoid of contractility in this location that nothing but aspiration will succeed in removing any particular amount of it. I will again assert my opinion that the *bas fond* cannot be thoroughly drained by any system of catheterization. It may be thoroughly flushed in quite a proportion of instances by following the withdrawal of the urine by aseptic or antiseptic irrigation. Under such circumstances the residual urine is replaced by a residuum of the antiseptic or aseptic fluid used, so that from a mechanical stand-point the patient is just as bad off as ever. It is my belief that in some instances residual urine is present in considerable amount long before any particular symptoms of vesical irritation develop. In most instances symptoms of vesical irritation develop long before there is any particular accumulation of residual urine. I have come to believe,

therefore, that the residual urine *per se* has little if anything to do with the production of symptoms of vesical irritation, but that it is largely coincidental. The symptoms of vesical irritation are explicable upon far more rational grounds. It seems to me that the development of a hyperæsthesia of the posterior urethra is the essence of the difficulty when vesical symptoms develop. To all intents and purposes prostatic hypertrophy is a condition of a chronic inflammatory character. There is more or less new growth encroaching upon the calibre of the posterior urethra, more or less rigidity of this part, and considerable pressure upon the delicate nerve filaments which constitute the seat of the *besoin de uriner*. The relief secured by the passage of the catheter I believe to be chiefly due to two factors: *First*, the blunting of the sensibility of these nerve-filaments by pressure and stretching of the parts to which they are applied; *second*, the physiological rest accorded the bladder and particularly its neck by the mechanical withdrawing of the urine. If this proposition be correct, we have a ready explanation of the fact that in some cases of prostatic disease it is impossible to systematically draw off the urine with the catheter because of extreme hyperæsthesia. So marked is this hyperæsthesia that in some cases the slightest passage of the catheter is attended by considerable vesical tenesmus and an aggravation of the symptoms of vesical irritation. Overstretching, however, under such circumstances, by means of the sound or the finger through the perineal *boutonnière* is often attended by most brilliant results, temporary, it is true, in a large proportion of cases, but enduring for a considerable length of time in many.

Having thus expatiated upon the relation of residual urine *per se* to the symptoms of vesical irritation, it remains to be considered whether residual urine ever assumes a position of importance in the pathology and symptomatology of the disease. I have already stated my belief that the residual urine is simply an incident upon which, if taken alone, the symptoms of vesical irritation in no wise depend. After a time the patient falls into the hands of a physician who regards residual urine as the source of all the trouble. Infection is engrafted upon the innocuous mechanical condition present. The residual urine becomes septic, a septic cystitis is set up, which extends to the true vesicle,—*i.e.*, the posterier urethra, —and the patient is now tormented worse than ever, his accumulation of residual urine now being rather an important factor, for the reason that, no matter how thoroughly the bladder may be emptied, and no matter how much we may try to blunt the sensibility of the posterior urethra, constant germ-infection is going on, and nothing but drainage and antiseptic irrigation will avail anything in securing relief for the patient. It is not my purpose to enter into the discussion of the various methods of bringing about temporary or permanent drainage of the infected *bas fond*. I will simply state my belief, however, that even a suprapubic cystotomy is not perfectly satisfactory in this respect. Approximately perfect drainage is obtained, it is true, but a large amount of the benefits from suprapubic

cystotomy is due, not so much to the drainage, as far as the relief of mechanical accumulation is concerned, but to the fact that the posterior urethra and necessarily the bladder are put at rest, the urine being allowed to escape so rapidly that decomposition is inhibited, even in the presence of actual germ-infection. Ideally perfect drainage of the *bas fond* can only be accomplished by through-and-through drainage from above the pubes, through the trigone and out of the rectum or posterior perineal region. There are certain objections to this method which it is not necessary to dilate upon. I am not recommending this particular method of drainage, nor, indeed, do I propose to discuss the question even in a general way; I simply wish to state my opinion that only by some such procedure can the *bas fond* be thoroughly drained, reserving what I have to say on the technique of vesical drainage for a separate paper.

THE TREATMENT OF STRANGULATED HERNIA.[1]

BY J. WISHART, M.D., F.R.C.S. (EDIN.), M.R.C.S. (ENG.),
London, Ontario.

THERE is probably no affection attacking our race that is such a menace to life as a strangulated hernia; there is certainly none that becomes so fearfully aggravated by delay. Since the introduction of antiseptics and the advent of what is termed modern surgery, we have had a reduction in the death-rate after most operations in almost every department of our art; yet, notwithstanding all this, the mortality after operations for strangulated hernia is, perhaps, greatly higher than is generally appreciated. In 940 cases operated upon consecutively in St. Thomas's, Guy's, and St. Bartholomew's Hospitals, the mortality was 43 per cent., the death-rate being nearly equal in all three of these institutions. The mortality at the London Hospital, according to Treves, is at the present time nearly 50 per cent.; one may therefore conclude that the mortality in the four largest London hospitals is not less than 44 per cent. Of 85 cases of herniotomy in the Manchester Royal Infirmary, during a period of twelve years, the mortality was 44.7 per cent. Dr. Connor, of Cincinnati, furnishes an analysis of 33 herniotomies; of these 12 recovered and 21 died,—a mortality of 63.6 per cent. Rushton Parker, of Liverpool, reports 61 cases of strangulated hernia operated upon with a mortality of 40.9 per cent. Although statistics are to some extent misleading, it will be found that in most large hospitals where all cases of operations are reported, and nothing concealed, the mortality after cutting operations for strangulated hernia still remains high, and has not apparently been diminished by modern treatment.

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[1] Read before the Ontario Medical Association, June 6, 1894.

Mr. Jonathan Hutchinson has lately drawn attention to the unsatisfactory results following operations for strangulated hernia, and severely criticised surgeons who advise operations without a careful use of taxis in cases where the contents are in a fair condition. He made the astounding statement that in the London Hospital, which had the largest hernia practice in London, or, perhaps, anywhere, in 1861, 33 per cent. of operations on strangulated hernia were fatal. At St. George's Hospital at the same time 30 per cent. were fatal. At the London Hospital now 50 per cent. of these operations are fatal. Mr. Hutchinson further states that modern operative treatment could nowhere show as low a mortality as 30 per cent.

That the fatality after operations upon hernia should have remained the same or actually increased during the past thirty years is not in keeping with the advance in other branches of our art, and is a standing reproach to our boasted modern surgery. To what, then, is this high mortality due? It requires little experience to teach the practical surgeon that in the early performance of kelotomy lies its great safety. The high mortality is to be ascribed to the length of time elapsing between the date of strangulation and the operation undertaken for its relief. It is not so much the operation but the delay that kills. In many cases the early management has been bad: the hernia possibly not made out for one or two days; taxis used unskilfully or persevered in too long. In spite of all that has been taught concerning the importance of early operations, kelotomy seems to be regarded even yet by some practitioners in the light of a last resource, and one that is unsafe to use until the symptoms have persisted for days. Of late years, however, the teaching in our colleges has been in the direction of advising not only early operating, but avoidance of too prolonged use of taxis. Its dangers, although increasing with age and strangulation, have, it is to be feared, been greatly exaggerated. Mr. Hutchinson is of the opinion that the present high mortality in London is due to the surgeons' not using taxis at all.

	Name.	Age.	Sex.	Variety.	Date of Operation.	Contents.	Time Strangulated.	Time of Recovery.	Remarks.
1	Mrs. —.	38	F.	F.	. . . . .	B. and O.	6 days.	Death.	Peritonitis second day.
2	Mrs. C	40	F.	F.	March, 1888.	B.	3 "	5 weeks.	
3	Mrs. V.	42	F.	F.	April, 1888.	B. and O.	2 "	"	
4	Mrs. N.	40	F.	F.	Dec., 1890.	B.	3 "	"	
5	Mrs. M.	50	F.	F.	Nov., 1891.	O.	48 hours.	3 weeks.	
6	Mrs. O.	65	F.	F.	July, 1892.	O.	24 "	2 "	
7	Mrs. R.	44	F.	Ing.	Dec., 1893.	O. and B.	24 "	2 "	
8	R. S.	19	M.	Ing.	Dec., 1890.	B. & testicle.	8 "	5 "	
9	C. H.	52	M.	Ing.	Feb., 1890.	B. and O.	6 "	5 "	
10	T. McM.	42	M.	F.	June, 1892.	O.	5 days.	2 "	
11	T. M.	49	M.	Ing.	Feb., 1887.	B.	5 hours.	2 "	
12	R. M.	50	M.	Ing.	May, 1882.	B.	20 "	4½ "	
13	S. W.	63	M.	Ing.	Aug., 1893.	B. and O.	3 days.	Death.	Eight hours. Shock. Gut wounded.
14	Mrs. S.	65	M.	Ing.	April, 1893.	O.	2 "	2 weeks.	
15	Creighton.	76	M.	Ing.	March, 1894.	B.	2 "	Death.	Third day.
16	Mrs. P.	48	F.	F.	May, 1894.	B. and O.	12 "	"	Gangrene: artificial anus made.
17	Mrs. G.	70	F.	F.	No operation.	B.	Uncertain.	"	One month after nature had formed an artificial anus.

Comments.—The table shows an analysis of 17 cases of hernia, with 16 operations. Of these 12 recovered (6 males and 6 females), and 4 died (2 males and 2 females), as well as No. 17, upon whom no operation had been performed.

Of the cases of recovery 2 had been strangulated three days, 1 (an omental hernia) five days, and the 3 others 2 days.

Of the remaining 6 cases, 2 had been in a condition of strangulation one day, and the remainder from five to twenty hours.

Of the fatal cases, 1 had been strangulated six days, 1 twelve days, 1 two days, and another two and a half days.

Of the 16 operations, 8 were performed on males and 8 on females. Of these 8 were for femoral ruptures, with 2 deaths, and 8 for inguinal, with 2 deaths. The youngest operated on was nineteen, and the oldest seventy-six years; 3 were between thirty and forty; 7 between forty and fifty; 1 between fifty and sixty, 2 between sixty and seventy.

Of the fatal cases 1 died on the third day from supposed peritonitis, but there was no autopsy; another in eight hours, from shock; 1 in three days, from exhaustion apparently, the patient was seventy-six years of age and suffering from hemiplegia at the time of operation; the last in thirty hours, from exhaustion.

One of the herniotomies was for femoral rupture in the male; one for inguinal in the female. In all the other cases operated upon the inguinal hernias were in males and the femoral in females. In 6 of the cases the sac contained both bowel and omentum, in 5 bowel only, in 4 omentum, in 1 bowel and undescended testicle, which was removed. In most of the cases where omentum occupied the sac it was adherent, a ligature was applied above the adhesions and after resection returned to the abdominal cavity. In case No. 13 the bowel was wounded accidentally in relieving the stricture; Lembert's sutures were applied and the wound enlarged to cleanse the peritoneal cavity. The operation was prolonged, owing to this unfavorable complication, to one hour and a quarter. Death took place in eight hours,—apparently from shock. The sac was opened in every case but one.

In No. 16 (report) alone was there a certainty of gangrene and an artificial anus made. In No. 10 the omentum looked suspicious; it had been strangulated for 5 days, but the patient recovered. In No. 1 the bowel looked dark and doubtful, but was returned, with a cessation of symptoms; the bowels moved during the night, pain and vomiting ceased, but she died on the third day of what the attending physician thought was peritonitis. In case No. 15 the hernia had been long irreducible, with the bowel and mesentery firmly adherent; the stricture was relieved, but no attempt was made to sever the adhesions. Death ensued. The age was seventy-six.

The operations extended over a period of twelve years, from May, 1882, to May, 1894.

An attempt at radical cure was made in 75 per cent. of the cases. In Nos. 1, 13, and 15, the patients being much exhausted and the necessity of

a rapid completion of the operation plain, the sac was left alone and the wound closed.

My experience of strangulated hernia leads me to the conclusion that adherent omentum is present very frequently, adherent bowel rarely. The former condition was found in 10 cases, the latter in 1 only. The omentum generally, in addition to being adherent, was found matted together and so altered in structure that it was thought best to remove it by drawing down the more adherent portion, ligaturing with silk, and after excision returning it to the peritoneal cavity. In case No. 15, where the bowel and mesentery were both firmly adherent to the sac, the patient weak, suffering from hemiplegia, and seventy-six years of age, the operation consisted in relieving the structure and closing the wound as speedily as possible.

In none of the fatal cases was there an autopsy. In the first, strangulated it was supposed about six days, peritonitis was the alleged cause of death. The second fatal result was due to shock after prolonged operation with slight wound of the bowel. The third died, apparently of exhaustion, on the third day; the fourth in thirty hours from the same cause. The real cause of death after herniotomy is frequently difficult to make out.

In the early part of the present century the introduction of chloroform greatly affected the methods of treatment in strangulated hernia. We are told that the question in connection with the operation was whether or not the sac should be opened if taxis failed. It was considered the best practice to try taxis patiently and for a considerable time, providing that the hernial contents were in a fair condition. If the surgeon suspected gangrene from the symptoms present, the advice was given to operate at once without any manipulation, and always to open the sac. The vital importance of early operation was insisted upon then as now, but the taxis was very much more prolonged and considerable force used. Either reduction by taxis or Petit's operation, in the event of the former failing, was considered a great improvement on any operation necessitating an opening into the peritoneal cavity.

Since the improved method of treating wounds has come into use, it is recommended in most cases to open the sac, thoroughly examine the hernial contents, and, after dealing with them as their condition requires, complete the operation by performing the radical cure. Later still there has grown upon us a disposition to use taxis only for a short time and very gently, and a decided preference for early operation. Some surgeons go the length of not using taxis at all. No doubt this practice is fairly successful in experienced and skilled hands; we must bear in mind, however, when approaching this subject, that we are dealing with cases of emergency. Probably one-half the operations for strangulated herniæ are performed by general practitioners, far removed from hospital accommodation, without the necessary assistance; to this may be added inexperience in operating, bad sanitary surroundings, and possibly imperfect light.

In cases suitable for taxis (that is, of not too long duration) where the

patient is a long distance in the country and the aid of a fellow-practitioner not at hand, I am disposed to think the physician would be justified in giving chloroform alone and attempting reduction. As a general rule, however, the patient's consent should be obtained for a cutting operation before an anæsthetic is given, so that, should the taxis fail, relief can be given by the knife. Whatever line of treatment is adopted, there should be no excuse for delay, for every hour that elapses carries the subject of a strangulated hernia nearer and nearer to his grave. I am one of those who believe that a patient should not be allowed to vomit a second time from strangulated hernia without attempting something for his relief. In all but two of the seventeen cases reported taxis had been used, and in the majority persevered in for some time, but in none had any appreciable harm been done to the hernial contents. The bowel is capable of enduring a great deal of manipulation provided the strangulation has not long been present and the taxis used is in the right direction.

All matters relating to the operation of herniotomy and its usual complications are so well understood and familiar to all that it would be out of place to refer to them. I make an exception in respect to the condition of gangrene, and shall report the histories of the two cases from the annexed table where this was present:

Case XVI.—Mrs. P., aged forty-eight, was seen on May 28, about 6 P.M. The abdomen was greatly swollen and very tense, and nothing had passed per rectum for twelve days. There was a swelling in the right groin in the region of the femoral canal. The patient was weak, pulse small and rapid. Two hours later she was admitted to the hospital, and under an anæsthetic an incision was made down to the stricture. Both bowel and omentum were adherent, the former being gangrenous, and pus was present among the adhesions. The bowel was incised and an artificial anus made. Death took place in thirty hours.

Case XVII.—Mrs. G., aged seventy. Admitted to hospital March 2, 1894, with fæcal abscess resulting from gangrenous femoral hernia. It was ascertained from her family physician that he had been called in about February 12. At that time the bowels had not acted for two weeks, though she was moving about and doing her own work. From this date to the 18th she suffered from pain in the abdomen, vomiting, and constipation. An enema caused an evacuation, after which diarrhœa set in and lasted for four or five days. On February 22 she complained of a painful swelling in the groin; poultices were used, and a discharge took place on the 26th, four days before her admission to the hospital. She was delirious at times, with a rapid and feeble pulse. She took nourishment fairly well, and most of the discharges took place *per anum*, and for a time it was hoped she would recover. An eczematous eruption spread around the opening in the groin, and the patient gradually sank and died from exhaustion on March 26. The autopsy showed omentum adherent to the femoral ring, as well as a perforated ileum about six feet from its termination. No spur could be

seen, and the fistula was the size of a thumb-nail. There was a rather free passage towards the cæcum, through which much of the discharges had passed.

Treatment of Gangrene.—These are the only two cases of gangrene of the intestine that have come under my notice, and as they afford an illustration of treatment by artificial anus I have thought it my duty to draw particular attention to them. In looking up the literature of this subject I found the following, taken from a valuable contribution by Ransohoff, of Cincinnati: Of 27 cases of hernia coming under his own observation, 4 were gangrenous, three being of the bowel and one of the omentum. Of 170 kelotomies for strangulation in Hagedorn's clinic, gangrene, real or suspected, was encountered but 25 times. Of 486 cases collected from different sources, only 68, or about 14 per cent., were gangrenous. In Hagedorn's 170 cases the omentum was dead in one only. This condition is so very rare that some surgeons doubt its existence altogether. In strangulated omental hernia the symptoms are said to be less severe; the pain, vomiting, and constipation are not so well marked. I have seen, however, as complete constipation in these cases as when the bowel occupied the sac.

No doubt a large number of omental hernias are irreducible, and adhesions have formed long before the date of strangulation, the compressed portion of omentum receiving its blood-supply from the wall of the sac beyond the point of constriction and thus gangrene is averted. When this rare condition is met with, the treatment consists in relieving the constriction, drawing down the mass, ligaturing, cutting off in sound tissue, and returning the stump to the abdomen. I am inclined strongly to the opinion that the cases in which gangrene is found are usually those that are reducible before strangulation, yet even here adhesions form around the seat of constriction, the septic products found in the sac are prevented from entering the abdominal cavity, and the development of general peritonitis averted; but where this condition exists it is advisable in operating to use drainage and not close the wound. When gangrenous bowel exists, the question as to the proper course to pursue is a difficult one. Of late years many recoveries have followed primary excision with suture of the intestine. The old operation (formation of an artificial anus) is anything but attractive, and the percentage of deaths has been large.

Much has been written upon the treatment of gangrenous hernia and great difference of opinion manifested by surgeons. When the bowel is in what may be termed a doubtful condition, it has been recommended by Paulsen to divide the stricture, and, after drawing down and covering the intestine with antiseptic dressings, await developments. I think, however, it is, as a rule, better to carry out the plan recommended by Treves and replace it within the peritoneal cavity with a drainage-tube under antiseptic precautions. When, after this treatment, the bowel gives way, experience has shown that the contents escape through the wound. Many experienced surgeons have met with cases in which the congestion of the bowel has

been so extreme that they have doubted whether it were possible for repair to take place, yet its return led to complete recovery. As one only rarely meets with such a condition, it is difficult or, perhaps, impossible to say when the bowel is past the state of resolution. If the intestine, when exposed, be gangrenous, two courses are open to the surgeon: division of the stricture followed by resection and suture, or formation of an artificial anus.

Mr. Kendall Franks, of Dublin, has lately collected together a table of 222 cases of gangrenous hernia in which resection of the bowel had been performed, the mortality amounting to 48 per cent., while in a rather larger number, where the surgeon had made an artificial anus, the deaths amounted to 80 per cent. (*Medical Record*, November 11, 1893, p. 621). Zudler, of St. Petersburg, gives 289 cases in which primary resection was performed, and 287 in which an artificial anus was made. The first group showed a mortality of 49.13 per cent. and the second 74.22 per cent. As to which method is the better—resection and suture of the bowel, or the formation of an artificial anus—the decision must depend upon the local condition of the hernia and the ability of the patient to withstand a prolonged operation under an anæsthetic. In some cases of gangrene, more particularly of the femoral variety, only a very small knuckle of intestine is involved, and this, after the formation of an artificial anus, closes frequently without any operation whatever, the gut being simply incised and the wound treated as an abscess, when a small fæcal fistula results and the contents of the bowel take their natural course with trifling danger of death from inanition. Banks strongly recommends that the stricture be not divided in these cases, as the abdominal cavity is opened and exposed to infection from the putrid sac. In one of the cases presented, although no operation was ever attempted, Nature performed all this for the patient, the small aperture discharging and most of the intestinal contents passing *per anum;* and had the patient been admitted to the hospital earlier, or been younger in years, and with better care, I feel quite confident she would have recovered.

In other cases, where there is a considerable section of the bowel in the sac, and where the strangulation has existed for several days or been unusually acute, the portion at the line of constriction may be completely dead from direct pressure. The bowel beyond may be gangrenous throughout or only in part; the centre of the coil directly opposite the mesenteric attachment is usually the portion that suffers. If the strangulation has been of long duration, adhesions will be found inside the constriction, rendering the withdrawal of the bowel extremely difficult after the stricture has been divided, from inflammation and subsequent matting together of the hernial coverings. The intestine above becomes filled with a brownish fluid undergoing fermentation and the gut enormously distended with gases, causing paralysis to some extent, and rendering the intestine incapable of recovery even after the stricture has been relieved. The portion of intestine below the constriction is, on the contrary, decidedly pale, and contains, as a rule, only mucus. When delay has brought the hernia into this most

deplorable condition the general symptoms are those of collapse, the muscular system relaxed, the urinary secretions diminished, the skin cold and moist, the heart feeble, and the end not far off. When patients reach this state of exhaustion, death is most likely to ensue whatever line of treatment be adopted, for after three or four days of strangulation the chance of recovery is small. In cases so extreme an artificial anus should be made,—having the advantages of a short operation and small amount of technical skill necessary for its performance. The sac should be freely opened up, well washed out with an antiseptic solution, the bowel freely incised, left in position, and well drained after dusting the parts with iodoform. The weight of authority is in favor of not dividing the stricture for fear of infecting the peritoneal cavity. The experience in Case 17 shows that this is not necessary. If one is sure about the limits of the gangrene, the patient young, in a fairly good condition, and free from peritonitis, resection and suture of the bowel may be undertaken with a fair measure of success.

When the operation is decided upon, the question arises whether it is to be effected at the site of the hernia or through a median abdominal incision. In inguinal hernia the wound can be enlarged and will afford ample space, but in the femoral variety the crural ring is so small that it may be necessary to either divide Poupart's ligament or incise the abdomen in the median line. The mesentery is divided a short distance from the intestine and in a parallel line, the gut being controlled by the fingers of an assistant. The continuous Lembert suture is probably the best to employ, using fine silk for both mesentery and bowel. The excision must be made wide of the gangrene, so that the stitches shall lie in healthy tissue, and great care taken to avoid infection of the peritoneum from the sac. One great objection to this operation is the time occupied in its performance. The anastomosis button of Murphy may be also used with decided advantage; it is more easily inserted than stitches, requires little technical skill for its application, and very much shortens the operation. Dr. Murphy (*Medical Record*, May 26, 1894) reports six cases for strangulated hernia in which the button was used, with five recoveries and one death, and six cases for fæcal fistula with no deaths. Dr. Walker, of Detroit, reports two cases with one death after its use. The union may likewise be effected by Senn's bone plates or Abbe's catgut rings. Probably the best method has not yet been devised, and, as these appliances are not usually at hand when required, the suture will probably hold its place until surgeons are agreed upon one plan of treatment.

In carrying out the operation of resection some surgeons establish an artificial anus and close this after a day or two, this proceeding being applicable in cases where the collapse is severe or the primary operation is contraindicated owing to the limits of the gangrene not being absolutely determined. The advantages of primary excision as compared with the formation of an artificial anus are great. After resection of the bowel the patient is restored to health in a few weeks, whilst in the latter the condi-

tion is most pitiable: a worrying eczema, the constant dread of a secondary operation, and the existing offensive discharges, leave the patient in so sorry a plight that death is almost preferable to existence.

Although during the past six years many cases have been successful after primary resection, yet each operation has its proper place. I am disposed to think that most of the successful cases after resection were operated upon rather early and in comparatively strong patients. In many gangrenous hernias the general condition of the patient is so bad that it would be impossible for such an operation as intestinal excision to be borne. The proper course to be pursued in each individual case must be left to the judgment of the surgeon. Certainly, resection of the bowel is an ideal operation, and where the necessary assistants are at hand and speed can be used, I think it should be tried, provided the patient is not in a state of collapse.

A FURTHER REPORT ON THE USE OF THE MENTHOL SPRAY THROUGH THE STOMACH-TUBE.[1]

BY A. L. BENEDICT, A.M., M.D.,
Buffalo.

It is now nearly two years since my first use of the menthol spray in the treatment of gastric diseases, and over a year since the first series of cases was published in the International Medical Magazine, November, 1892. Since then I have learned that Dr. Max Einhorn, of New York, had previously devised a long spray nozzle to be carried into the stomach. The two methods, however, are quite different, since I use an ordinary nickel-tipped atomizer and blow the vapor into the outer opening of the stomach-tube.

Three questions arise in the consideration of any treatment that is still awaiting general adoption: 1. Is it feasible? 2. What *à priori* reasons recommend it? 3. What are the practical results?

As to the first question, you can determine that the spray, which consists of a two-and-a-half per cent. solution of menthol in liquid albolen, does pass through the five feet of rubber tubing. The spray constitutes a sort of lavage, and in practice the vapor can be seen going into and coming out of the tube just as plainly as if water were the medium used. In two patients with large œsophagi I have seen the vapor issue through the mouth and nose after it had been in the stomach. After distending the stomach with the spray more than three hundred cubic centimetres of vapor, still impregnated with menthol, have been caught in an inverted glass previously filled

[1] Read at the meeting of the Central New York Medical Society, at Rochester, June 16, 1894.

with water, and at least an equal quantity escaped. If any further proof were needed that the spray actually reaches the stomach, it is furnished by the fact that patients subjected to this treatment taste the menthol, which could not reach the mouth except by regurgitation through the œsophagus outside the tube, or else by the blood-current after absorption.

Menthol, like the active principles of most volatile oils, is antiseptic, and, after the first sensory excitation has passed off, locally anæsthetic. It also increases the blood-supply and nutrition. The spray of menthol dissolved in a mineral oil has already achieved a reputation in the treatment of catarrh of the air-passages, while watery and alcoholic preparations of peppermint are time-honored and effective, although not powerful, means of treatment of various gastro-intestinal ailments. I ask your attention, therefore, not to a new and untried drug, but to a method of using it which insures its even distribution over a clean stomach surface without the weight of a volume of liquid sufficient to distend the stomach, and with the use of a medium as inert and unirritating as possible,—namely, a purified petroleum oil. I would recommend this gaseous lavage (1) in gastric fermentation due to yeasts or bacteria; (2) in painful affections, especially when the pain is griping and burning and due to fermentation; (3) in catarrhal inflammations, except the acute forms in which all mechanical or irritating modes of treatment are emphatically contraindicated. It must be borne in mind, however, that chronic gastritis is often due to some irremediable circulatory disturbance, and in these cases the spray, like any other treatment, must be palliative only. In dilatation the catarrh and fermentation would seem to indicate the use of the menthol spray unless there were danger of mechanical injury by the touch of the tube on the distention of the stomach. I speak, however, without experience. In atonic conditions, using the word atonic in its broadest sense, the local stimulation of the menthol seems to tone up muscle-fibre, increase the nutrition of the stomach by calling more blood to the organ, and in the same way call forth greater secretory activity. At the same time the discomfort and fermentation which so often accompany atonic dyspepsia are relieved.

The following cases, in addition to those comprised in the first report and to others not yet published, are offered in illustration of the apparent benefit following the menthol treatment.

Case I.—Mrs. A., aged forty, addicted to liquor, sick in bed three or four days. She was moderately jaundiced; her temperature ranged about 103° F.; she vomited mucus and bile at frequent intervals. The liver dulness was slightly diminished, and a diagnosis was made of hepatic cirrhosis with subacute gastro-duodenitis to account for the immediate symptoms. There was nothing to indicate gall-stones. During six days she improved somewhat on medicinal treatment, comprising bismuth, carbolic acid, and calomel, and attention to various symptoms. Potassium iodide given in capsule was not found in the saliva after thirty minutes, whereas, it should have been absorbed and thus eliminated in ten minutes. Salol was recovered from the urine an hour after eating. The absorption, therefore, was at fault rather than motion. Six days after the patient was first seen, lavage was practised eight hours

after a light meal. Digestion was complete, little mucus, but considerable bile was removed. The menthol spray was then introduced. No food was allowed till evening. The next morning the jaundice was much less marked, the patient had eaten heartily, contrary to directions, but without bad result. A day or two later she left the hospital feeling perfectly well, so that a study of the gastric chemistry was impossible. She has been heard from several times in the last three months and is still apparently well, although the prognosis is ultimately bad.

Case II.—Miss G., aged twenty-five, while sketching in the country became overheated, and for a year complained of dizziness, headache, and fatigue. During the last three or four months she was troubled with nausea even while hungry, and had considerable gastric flatulency. There was no vomiting and the bowels were regular, but colicky pains were complained of. The patient was treated for liver-trouble, but I could find no evidence of it. Hysteria was conspicuous by its absence. The tube was inserted without difficulty or distress to the patient. It being five and a half hours after a meal, the stomach was found empty except for a little gastric mucus. The menthol spray was introduced. The patient was making only a short visit in Buffalo and no opportunity was afforded for careful examination. Immediate relief of the fermentation and nausea followed the treatment and persisted for six or seven months.

Case III.—Mrs. Kate C., aged thirty-six, has had nine children. Had typhoid fever eleven years ago. Four years ago was jaundiced, and at the same time a tumor formed over the liver, burst, and after the discharge of its contents the jaundice disappeared. Complains now of fainting spells, ordinary dyspeptic symptoms, and particularly of distention of the stomach and bowels with gas. Stomach not dilated, liver dulness normal, heart weak, but without murmurs, physical examination otherwise negative. Lavage was practised eight hours after a meal, consisting of a roll and cup of coffee. A little mucus and some pasty remains of the roll were removed. The stomach contents were still faintly acid. The patient submitted reluctantly to the passage of the tube. There was much reflex retching during lavage, but the expulsive power of the stomach was almost wanting. The menthol spray was then introduced. It was certainly not the moral effect of this treatment, which the patient regarded with aversion and distrust, that caused her to report a marked improvement during the next few days, especially in the absence of fermentation. A week later, the tube was again passed eight hours after a breakfast of a roll and coffee. The reaction of the stomach contents was neutral and digestion was complete. Only a little mucus, and most of that œsophageal, was removed. The menthol spray was again introduced. The patient remained under observation for a few weeks longer, no more treatment being necessary.

Case IV.—Mrs. Myra B., aged nineteen; married two and a half years; one miscarriage at two months; one child living, aged one. She was treated for uterine trouble before the birth of the child, otherwise has enjoyed fair health. Stomach-trouble began a month ago. She would hack up phlegm and then vomit. Pain in stomach, sometimes dull, sometimes sharp, usually coming on soon after eating, even before the meal was finished. Much nausea. Slight constipation. Treatment with hydrochloric acid and an iron tonic afforded little relief, so, after a week, lavage was practised four hours after a meal of beef-steak, bread, and butter. Reaction faintly acid, a few shreds of meat remaining, otherwise digestion nearly complete. Starches and lactic acid had disappeared; there was only a little albumin; peptone and propeptone were present; little mucus. So far as these results could be relied upon, the trouble was rather sensory and motor than secretory. After cleansing the stomach with water, menthol was used. This produced a disagreeable feeling in the stomach for some hours, but the next day the patient felt better than in weeks before, and for five months she remained nearly well. Since then she has had a slight return of her trouble, but not enough to cause her to report for treatment.

CASE V.—Vincenzo C., an Italian, aged forty, had been under treatment for broncho-pneumonia suspected to be incipient phthisis. No bacilli were found, however. He complained of pain in the right hypochondrium and epigastrium, belching of gas and ordinary dyspeptic symptoms. Lavage was practised at ten o'clock, no food having been taken since the night before. On account of the large size of his œsophagus, siphonage was not perfect and the water issued from around the tube. Considerable mucus was removed, though most of it was œsophageal. The menthol spray was introduced, it being unnecessary to stop for the relief of distention, since, after eight or ten compressions of the atomizer bulb, the vapor would issue from the mouth and nose, having come through the œsophagus outside the tube. The patient reported favorably for a month or more, but then left the city.

CASE VI.—Mrs. F., aged fifty-four. For about three months has complained of weakness, irritability of the stomach, and constipation. She vomits, on the average, after one or two meals daily, though she will occasionally pass a day without vomiting at all. The vomiting usually begins about half an hour after eating. The vomited matter consists of the food taken and of bile, but does not contain mucus. No history of jaundice or of any serious illness. Physical examination of heart, liver, and stomach, negative. At breakfast she ate fried potatoes and eggs, at two P.M. a roll, drank milk and water, but vomited shortly afterwards, the vomited matter being tinged with green. Lavage was practised at 4 P.M., bringing away a little bile and mucus and fragments of potato. The stomach was quite irritable and would tolerate very little water at a time. It seemed to grasp the tube, for the outflow of water would suddenly stop and start again as soon as the tube had been rotated a little. Finally it became necessary to continue the rotation of the tube, five or ten cubic centimetres of water issuing at each turn. The menthol spray was introduced after cleansing the stomach as much as possible. The entrance and exit of the vapor was heard, by ausculation, like loud tubercular breathing. The patient reported favorably for a week or two and was then lost sight of.

CASE VII.—F. P., a girl, aged twenty-one, of low vitality, though well developed, began in December to complain of lack of appetite, of discomfort and heaviness in the stomach after eating, of occasional vomiting, and of constipation. Medicinal treatment relieved her somewhat, but on January 13, following worry, she was much worse than usual. The salol test showed somewhat delayed emptying of the stomach, salicylic acid being found by the aid of ether in the urine one hour after eating, and faintly without ether one and a half hours after eating. Lavage two and a half hours after a meal of a broiled chop, bread, and butter brought away acid stomach contents without hydrochloric or lactic acids. Starches had disappeared, there was albumin, and only traces of propeptone and peptone. Lavage was as thorough as possible. A few days later, the stomach absorption was found to be normal by the potassium iodide test. The dyspeptic symptoms were again aggravated on April 1 by a state of anxiety, and recourse was again had to local treatment. According to the salol test, the stomach motion was normal. One hour after a test-meal of fresh meat, bread, and butter, starches were found in considerable quantity. Although the contents were acid, there was no free hydrochloric acid. Propeptones and peptones were present as they should have been, and albumin was also abundant. After lavage the menthol spray was introduced. The patient's general health and her local trouble have since given little opportunity for examination or treatment.

This case of lack of hydrochloric acid secretion is of interest to me in contrast with a similar defect in a middle-aged woman, in whom the menthol treatment apparently causes bad results. On the other hand, a young man who has no lack of hydrochloric acid and whose digestion of albuminoids is good, while starch and sugar are found in the stomach hours after eating, has been greatly benefited by the menthol spray, which has checked the fermentation, pain, and vomiting formerly complained of. Both of these cases, however, are still under treatment.

I regret that these cases have not been more elaborately studied with reference to their gastric chemistry, and that some hint of the *post hoc, propter hoc* fallacy must attach to this report. Professor Oldberg, whose name is so well known in connection with the U. S. Pharmacopœia, once expressed the belief that every new and untried drug should be made officinal so that experiments with standard preparations of it might be facilitated and its value or worthlessness speedily determined. It is in the same spirit that I present to you the suggestion of the use of the menthol spray —or of any other medicated solution—through the stomach-tube.

REVIEW OF MEDICINE.

MEDICINE.

IN CHARGE OF JUDSON DALAND, M.D.,

Instructor in Clinical Medicine and Lecturer on Physical Diagnosis in the University of Pennsylvania; Assistant Physician to the University Hospital; Physician to the Philadelphia Hospital and to the Rush Hospital for Consumptives; Fellow of the College of Physicians of Philadelphia.

The Plague in Hong Kong. (*British Medical Journal*, August 25, 1894.) By James Cantlie, M.D., of Hong Kong.

The author defines plague as "an acute specific fever, of an intensely fatal character, accompanied by high temperature, cerebral congestion and delirium, and the formation of painful swellings of the lymphatic glands." The incubation is five to eight days, twelve in one well-observed case; invasion is marked by sudden headache, vertigo, rigor, rapidly-rising temperature, and vomiting. A dazed, semiconscious condition, not unlike a deep alcoholic intoxication, rapidly develops; the tongue is white-yellow, furred, red at the margins, later cracked and mahogany colored on the dorsum; buccal cavity dry, but thirst is not great; vomited matters are bilious or chocolate colored; constipation nearly always exists, and when the stools are loose it is looked upon as a good sign. Fæces are always yellow in color.

The buboes appear in the femoral, inguinal, axillary, and cervical glands; all glands, however, may be affected; and while the buboes usually appear from the first to the fourth day, numerous fatal cases never show them. Later they become massed together by much periglandular, sero-sanguineous effusion. The temperature subsides to normal about the third day, food is well taken, and often convalescence appears to be assured when the patient suddenly dies. Nothing positive is stated as to the mode of infection, but it appears to belong to the so-called "miasmatic contagions" rather than to the contagious diseases. Europeans are rarely affected.

Rats and lower animals are frequently affected, and may aid the spread of the infection. At the post-mortem no important changes are found, except in the glandular and periglandular tissues, which are much swollen by effusion, and tough, rarely soft and pultaceous, spleen-like, and more rarely still purulent or hemorrhagic; nothing in the heart accounts for the frequent fatal cardiac failure.

Treatment is unavailing; not more than three per cent. in Chinese hands, or twenty per cent. in those of Europeans, recovering in any case. Calomel and saline purges, indicated by the tongue, constipation, and bilious condition, showed no great value; similarly digitalis and strophanthus do not prevent cardiac failure. Antipyretics were little resorted to, principally in fear of the depressive action that they are supposed to exert on the heart; quinine was only given in a few cases where a large spleen pointed to malaria, the condition of the alimentary tract precluding its use in clear cases. Musk appeared to exert a somewhat favorable influence. Alcohol, which promises the best results, could not be given a fair trial on account of the prejudice of the people. The most rational treatment consists in early incision and early excision with injections into the glands of solutions of carbolic acid or bichloride of mercury, especially since Kitasato has shown that the bacteria are here present so largely; but no definite results have been obtained thus far. Food is well taken throughout the disease, save at the onset in those cases in which vomiting is marked.

A Case of Rapid Death Consecutive to a Primary Hemorrhage of the Thyroid Gland. (*Revue des Sciences Médicales*, July 15, 1894.) By P. Simon.

A man was knocked down by a fisticuff exerted upon the anterior portion of the neck. He was able to reach home, complaining only of great oppression, but died a couple of hours afterwards. No wound or trace of contusion was seen externally, though tumefaction was present on the neck. At the autopsy an abundant, diffuse hemorrhage was found in the region of the neck. The arteries were intact. The thyroid gland was increased in size, and in the right lobe there was found a cyst with calcified walls, and in the left the origin of the hemorrhage. No lesion of the larynx or of the trachea was seen. The heart was hypertrophied. No other lesions were found, except congestion of the lungs and liver. Death is supposed to have been due to compression either of the trachea or of the pneumogastric nerves by the hemorrhagic focus. The author states that it cannot be definitely stated that the hemorrhage was of a traumatic origin, for it could have occurred spontaneously or aided by external influence in those predisposed to the hemorrhagic diathesis.—*Rev. Méd. de l'Est*, No. iii. p. 77, 1894.

THERAPEUTICS.

IN CHARGE OF ALEXANDER D. BLACKADER, B.A., M.D.,
Professor of Therapeutics, McGill University, Montreal, Canada.

ASSISTED BY
D. I. EVANS, M.D.

On Tolysal. (Ueber die Wirkung des Tolysals. *Münchener medicinische Wochenschrift*, August 7, 1894.) By Dr. Bothe, of Freiburg i. S.

Tolysal is a derivative of tolypyrin which Bothe thinks is likely to supersede antipyrin. The drug was employed for its anodyne effect in the insane, epileptics, and idiots, one hundred and forty-seven doses being given to twenty-eight persons. It was found useful in the headache of neurasthenical and hysterical persons, and in organic disease of the head, in bone pains from old syphilitic lesions, and in chronic cases of joint-rheumatism. In a case of migraine in a woman, aged thirty-five, one and a half to two grammes of tolysal were capable of abating an attack, the drug not losing its efficacy in future attacks, though in another case, in a man, it was found to be useless. The odor is very disagreeable, the best method of administration being in hot soup or in Bavarian beer, though, as a rule, the method of enclosing in a capsule is to be preferred. It should never be given on an empty stomach. In order to counteract the suspicion of any suggestive therapeutic action of a new remedy, no mention was made of its newness, and control experiments with an equally offensive though inert material were employed where a favorable reaction had been obtained.

A Contribution to the Study of the Physiological Action of Chloralos. (*Bull. Général de Thérapeutique*, July 30, 1894.) By E. Marandon de Montyel.

The author has carefully studied the hypnotic chloralos in insane subjects, and gives an interesting account of his results. It was used in fifty-six cases suffering with insomnia and in twenty-five cases not thus affected. In the latter cases it was given after normal sleep in doses varying from thirty to seventy centigrammes. In these the sleep was usually light and preceded only by slight disturbances, such as vertigo, muscular twitchings, etc., and in two cases central blindness followed sleep.

The fibrillary contractions occurred in a large proportion of cases, in some going to muscular contractions affecting a limb; in two cases, both hysterics, the trouble advanced to generalized chronic spasms, extending over the three days of administration; these manifestations, in appearance so formidable, have absolutely no gravity.

In a few patients sleep was preceded by excitement, and in some no sedative effect was obtained.

The Employment of Betol for Determining the Action of the Motor Power of the Stomach. (*Revue des Sciences Médicales*, July 15, 1894.) By Fedora and Corselli.

From experimentation upon dogs the authors discovered that betol was not decomposed in the stomach. It was then found that if one gramme of betol were given to a healthy person the drug was broken up into its constituent parts in the intestine, and the salicylic acid appeared constantly in the urine in the course of seventy to eighty minutes. In a patient suffering from cancer, with dilatation of the stomach, the first traces of the acid were discovered only after three hours and twenty minutes. The writers, therefore, conclude that this drug can be advantageously employed for determining the motor power of the stomach.—*Arch. di farm. e terap.*, p. 641, 1893.

Treatment of Diphtheria with Resorcin. (*Revue des Sciences Médicales*, July 15, 1894.) By Binet.

The resorcin is given in fifteen times its weight of glycerin, the throat being cleansed with salicylic acid. In forty-three cases there were but four deaths, and these occurred from complications, such as paralysis and double pleurisy. There were no symptoms of croup observed.—*Journ. de Clin. et de Thérap. Infant.*, May 24, 1894.

The Diuretic Action of Pilocarpine. (*Revue des Sciences Médicales*, July 15, 1894.) By L. Sabbatani.

Contrary to the opinion of Schmiedeberg and Vulpian, this author considers pilocarpine to be in the possession of important diuretic properties. Paraldehyd has a directly opposite effect to pilocarpine on the kidney, causing the contraction of the blood-vessels of the kidney, caused by the latter drug, to disappear by acting directly upon the involuntary muscular fibres of the blood-vessels.—*Arch. Ital. de Biologie*, vol. xix. p. 476.

SURGERY.

IN CHARGE OF HENRY R. WHARTON, M.D.,

Demonstrator of Surgery and Lecturer on Surgical Diseases of Children in the University of Pennsylvania; Surgeon to the Presbyterian Hospital, the Methodist Episcopal Hospital, and the Children's Hospital; Consulting Surgeon to the Presbyterian Orphanage.

AND

JOSEPH P. TUNIS, A.B., M.D.,

Assistant Demonstrator of Surgery in the University of Pennsylvania; Surgeon to the Dispensaries of the Presbyterian, Methodist Episcopal, and Children's Hospitals.

Treatment of Inoperable Malignant Tumors with the Toxins of Erysipelas and the Bacillus Prodigiosus. (*American Journal of the Medical Sciences*, July, 1894.) By William B. Coley, M.D., of New York City.

The histories of ten cases of inoperable malignant tumors and a tabula-

tion of forty-four cases of the same are given, showing the results of treatment with injections into the tumor of the products of the streptococcus erysipelatosus and bacillus prodigiosus. In the course of his experiments the author at first used living fluid cultures of the streptococcus erysipelatosus in ten cases. The difficulty in producing erysipelas and the danger attending an attack induced the author to use the toxic products of the growth of this micro-organism. The cultures were obtained from fatal cases of erysipelas, and were grown for three weeks at a temperature of 37° C., and then passed through a Kitasato filter. The filtrate was put in glass-stoppered bottles, a small quantity of thymol crystals added, and kept in a dark place. Later the toxins of the bacillus prodigiosus, prepared in the same way, were used in combination with those of the streptococcus erysipelatosus. Again the streptococci were grown ten days in bouillon, the bacillus prodigiosus then being added, they were allowed to remain two weeks longer. The bouillon was then filtered and the filtrate was found to be exceedingly active, ten to fifteen minims being sufficient to produce a temperature of 103° F. to 104° F. Other cultures have recently been used. They are prepared by growing the bacillus prodigiosus four weeks or more in the streptococcus broth, to which a little cacao has been added, and which is then heated one hour to 58° C. The fluid is used without filtration, and the injection of five minims has produced a temperature of 105° F.

Of twenty-four cases of inoperable sarcoma recorded, fourteen showed a cure or marked improvement, eight slight temporary improvement, and two no apparent effect. In a sarcoma of the neck and tonsil, the neck tumor was entirely removed, partly by breaking down and partly by absorption, and the tonsillar tumor was much reduced in size. The patient is alive and well more than three years since the beginning of the treatment.

Of the two tumors not affected one was a recurrent osteo-sarcoma of the sternum, the other a recurrent sarcoma following primary sarcoma of the testis.

Nine cases of carcinoma are reported, but are too recent to note more than marked improvement in several of the cases.

Of three cases, either sarcoma or carcinoma, one showed decrease in the size of the tumor and is still under treatment, one no apparent effect and the treatment was stopped, and one remained stationary and is still under observation. Eight cases are reported treated with true erysipelas. Of these three died, two showed no check to the growth, two rapid growth after temporary improvement, and one showed disappearance of the tumor, sarcoma of abdominal wall, and no return seven years later. Two cases following inoculation with live cultures resulted fatally from the erysipelas produced.

Conclusions: 1. The curative action of erysipelas upon malignant tumors is an established fact.

2. This action is much more powerful in sarcoma than in carcinoma.

3. This action is chiefly due to the toxins of the erysipelas streptococcus, which may be isolated and used with safety.

4. This action is greatly increased by the addition of the toxins of the bacillus prodigiosus.

5. The toxins to be of value should come from virulent cultures, and should be freshly prepared.

6. The results obtained from the use of toxins without danger are so nearly equal to those obtained from an attack of erysipelas that inoculation should rarely be resorted to.

Gonorrhœal Arthritis, with Notes of Cases. (*American Journal of the Medical Sciences*, July, 1894.) By Thomas H. Manley, M.D., of New York City.

The failure of Neisser's inoculation experiments with the gonococcus leaves in doubt the precise fundamental element on which the contagion of gonorrhœa depends, therefore the explanation of the relation of this malady to the joint affection cannot be made on a scientific basis. Gonorrhœal arthritis is always dependent on a urethral irritation or inflammation; but there may be an absence of specific toxins from the effusion in some cases. The disease has little, if any, relation to inflammatory rheumatism, either in clinical features, pathology, or indications for treatment.

Gonorrhœal arthritis presents an onset that is gradual; it does not skip from one joint to another; it does not present remissions of pain and fever. The pain is always most intense at night, and the patient is able to be about in the daytime. In severe cases the disease runs a course of about six months, usually involving one joint at a time. In the author's experience it is as common in women as in men. No fatal cases can be found, and no cases are recorded, outside of one in the author's experience, in which amputation was necessary to save life. No post-mortem descriptions can be found in literature of the appearances of the joints after death.

For all practical purposes it is enough to divide gonorrhœal arthritis into two classes: first, the subacute or abortive; and, second, the acute severe gonorrhœal arthritis. The first variety is the more common. The inflammation is mild, first involving the synovial sheaths and thecal envelopes of the tendons, then the bones or arthritic structures. Its course is short and acute, it is not attended by any marked thermal disturbances, and there is very little constitutional irritation. Where there is a perceptible exudate into the joint it subsides gradually and entirely, leaving the functions of the limb unimpaired. In the second variety we see well-marked pathologic changes and organic alteration in the joint elements. The first stage is not, as a rule, painful, but when the stage of effusion is reached, and the inflammation extends to the tendon and muscle sheaths, the limb above and below the joint is very tender and painful, and all the tissues are tumefied. Sometimes the effusion is absorbed after this by an indiscretion, a recrudescence is set up, and the process is more active. The exudate may undergo fibrinous change anchylosing the limb. The exudate may become converted into pus, and the patient may show all the symptoms of septic

absorption. The pus may be absorbed, there may be spontaneous opening and escape of the pus, or there may be maceration of the joint surfaces with ulceration and erosion of the cartilage, ligament, membrane, and bone. If this latter condition supervenes, excision is out of the question and the limb must be amputated to save life. In the severe cases the synovial membrane is greatly thickened, granular, pulpy, and friable. The eroded surfaces of cartilage and bone present a worm-eaten appearance. The deposits of gonorrhœal arthritis are very slow of absorption, and may linger in an organized form, leaving a weakened limb with defective joint action.

Gonorrhœal arthritis is to be distinguished from rheumatism by the absence of the intense, fluctuating pyrexia and exhausting perspiration, in the absence of excessive deposits of phosphates, in the absence of surface hyperæsthesia, in the rare presence of cardiac complications, in the monarticular character of the trouble, and in the gradual onset. In gonorrhœal arthritis the joint can only be moved with great pain. Rheumatic inflammation never runs into suppurative changes within the articulation. The symptoms more common and more valuable than all others are the persistence of pain and inflammation in one articulation and the chronicity of the effusion into the joints. In gonorrhœal arthritis colchicum and the alkalies make no impression on the disease. From tubercular arthritis it is to be told by the absence of pulmonary symptoms and constitutional disorder, by the more acute course, and by the absence of involvement of the heads of the bones.

The prognosis is invariably good in the mild forms, but in the severe grades of the disease the functional power of the limb is never entirely renewed, varying degrees of anchylosis remain, trophic changes in the soft parts and wasting of the limb may follow, and, in rare cases, the limb must be sacrificed to save life.

The treatment should be both constitutional and local. Mercury occupies the first place among the remedies, and it should be applied vigorously and early, either by inunction, fumigation, hypodermically, or by the mouth. Sedatives are demanded for pain. Quinine, colchicum, alkalies, or cod-liver oil may be freely given, if indicated. The body should be at complete rest. Locally, bleeding is of first importance if the cases are seen early. Ten or twelves leeches may be applied to the joint unless the patient be tubercular. After the acute stage of the malady is passed, the temporarily-crippled joint may be made easier by bandages. Protracted immobilization in plaster of Paris and extension and counter-extension apparatus are useless unless the joint is hopelessly destroyed, when they may be used to fix the joint till anchylosis is complete. Hot or cold applications, emollient poultices, rubefacient plasters, and the actual cautery may be necessary in some cases. Surgical intervention is occasionally demanded. Injections of antiseptic solutions have never succeeded in accomplishing what was promised of them. When aspiration assures the presence of pus, incision

with free drainage is indicated. When the disease is more advanced, the surgeon should decide between resection and amputation.

Out of the ten cases reported five were males and five females; there were only three in which the gonococcus was found. One presented a history of coition at the close of the catamenia and no urethritis.

ORTHOPÆDICS.

IN CHARGE OF REGINALD H. SAYRE, M.D.,

Assistant to the Chair of Orthopædic Surgery, Bellevue Hospital Medical College, New York.

Bending of the Neck of the Femur in Adolescence. (*New York Medical Journal*, June 23, 1894.) By Royal Whitman, M.D.

The author reports four cases in which this condition came on as a result of impaired nutrition of the bone, not associated with any acute disease of the joint. The patients were under observation for considerable periods of time and in some of them the increase in the deformity and consequent disability was very marked. In one case the trouble was bilateral. The trochanter was elevated more or less above Nélaton's line, and abduction was limited in all cases, owing, according to the author, to the changed relation of the femur and pelvis. He does not think the change in the shape of the femur due to disease of the hip-joint or to rickets, but regards it as caused by impaired vitality of the bone due to some cause unknown, but which may vary in different cases and which renders the bones too weak to do the work which is put on them.

The treatment, aside from that of the general condition, will be: 1, to remove the exciting cause,—*i.e.*, overwork. In some cases simple cessation from occupation may answer. In others, especially unilateral cases, the long traction hip-splint is indicated. 2. Local massage, exercises, and manipulation, excessive motion in the direction in which motion is restricted. 3. In advanced cases with bad deformity, osteotomy below the trochanter.

As for diagnosis, marked prominence of the trochanter above Nélaton's line can only be caused by the following conditions:

1. Displacement of the head of the bone from the acetabulum.
2. Change in the angle of the neck of the femur.
3. Upward enlargement or "wandering" of the acetabulum. Dislocation, congenital or traumatic, or resulting from disease, may be excluded by the history.

Other cases have been reported by Müller, Röser, Zeis, Keetley, and Monks. The article is well worth reading in its entirety, and has full bibliography.

OBSTETRICS AND GYNÆCOLOGY.

IN CHARGE OF RICHARD C. NORRIS, M.D.,

Demonstrator of Obstetrics in the University of Pennsylvania; Physician to the Preston Retreat; Consulting Obstetrician and Attending Gynæcologist, Southeastern Dispensary and Hospital for Women and Children.

Symphyseotomy. (*Annales de Gynécol.*, April, 1894.) By Morisani.

The conclusions of Morisani, who has tested the operation perseveringly during twenty-eight years, were given at the recent Congress in Rome and are of interest. He believes that clinical experience has fully justified the operation, and gives the limits of pelvic contraction in which it is indicated as 6.7 centimetres to 8.8 centimetres. The fœtus should be alive, and the operation performed at term, with dilatation advanced. At the present time he does not favor a combination of premature labor with symphyseotomy. The interpubic cartilage may be divided from below upward or from above downward, provided the subpubic ligament is surely divided. The subsequent use of forceps is useful, but not indispensable. To secure union in the joint it is sufficient to suture the soft parts and fix the pelvic bones with a bandage. He thinks the operation should only be compared with and is always preferable to embryotomy when the fœtus is alive, and predicts that it will take the place of the relative Cæsarean section. The supposed advantages of induced labor at the beginning of the ninth month over symphyseotomy at term are debatable. Ischio-pubiotomy, as done by its inventor, Farabeuf, differs from the pubiotomy of Aitken and Galbiatti, and is a valuable operation in Naegele's obliquely contracted pelvis.

The alleged disastrous results of symphyseotomy are to be explained by the operation having been performed below the limit of its indication or at the wrong period of labor, by an improper manner of operating, by previous lesions of the genitals, or by special conditions of the patient. The death of the fœtus must be attributed to too long delayed intervention, to faulty methods of extraction, or to accidental circumstances.

Ovarian Pregnancy. (*Bibliothek for Läger*, No. 1, 1894.) By A. Larsen.

In view of the extreme rarity, and in some quarters active doubt, of the occurrence of ovarian pregnancy, the following report of Larsen is noticed. Primigravida, age twenty-three, felt fœtal movements at the fifth month. About the normal end of gestation pains occurred, blood was evacuated *per vaginam*, and fœtal movements ceased. Delivery did not occur. More than a year after the beginning of pregnancy, the patient presented herself with a tumor in the abdomen, and complained of pain and bearing-down sensation. A round smooth tumor, near in size to the normal uterus, was removed by laparotomy. The tumor consisted of a sac containing a male fœtus macerated and compressed. In the wall of the sac were groups of follicles, with evident membrana granulosa, and in some of them ovula were found.—*Universal Med. Jour.*, July, 1894.

NEUROLOGY.

IN CHARGE OF CHARLES W. BURR, M.D.,
Clinical Professor of Nervous Diseases, Medico-Chirurgical College, Philadelphia, Pa.

Address before the American Medico-Psychological Association. (*Journal of Nervous and Mental Disease*, July, 1894.) By S. Weir Mitchell, M.D., LL.D., of Philadelphia.

After severely criticising the present method of conducting the public and private asylums of America, Dr. Mitchell concludes with a sketch of what he considers an ideal hospital should be like:

"It [the ideal hospital] is near to a city and close to a railway. Its grounds, fenced in, not by walls, but by railings, vine-covered and hidden by trees and shrubs, are amply acred, and include some forest and wide, cheerful gardens. Without are the farm and vegetable garden. I go in with my patient. We drive through an ample gate, ever wide open and watched. There is no loop-hole for the gate guard to look out of, no mysterious opening of barred doors. We enter an avenue among flowers and trees, out of view of the larger buildings. Shall we drive up to a formal hall and cold doric portico, and be met by a smileless janitor, and then wait in sad expectancy the long-delayed coming of the doctor in one of your vast, melancholy, unsympathetic parlors? No. We pause amid thick shrubbery at the side door, which is like that of a private house. In a small room, as pretty as taste can make it, we are received by a well-dressed head nurse, neat in cap and apron,—pleasant and kindly she shall be. My patient is then given a room, temporary quarters, in a special reception house, for it is part of my plan that this hospital shall be made up of grouped cottages, each with its family of ten or twelve, or less. In each is a head nurse and attendants. There are no bars, no locked doors. Apart stand smaller homes for those able to pay more. I want to get it as near to the life of the outer world as I can. At a distance, hidden by trees, is the administration building, vine-clad, I trust, and flanked by the wards for those who can pay little or nothing. There are no barred windows, and here are open doors, with attendants ready to say a kindly word to the too restless. I can see you smile. It has been tried, I believe, and has not been found impossible. Connected or not (better apart) are the library, reading rooms, billiard and amusement rooms, and gymnasium. In the grounds are tricycles and bicycles, etc., tennis and croquet grounds of course. Also, farther away, are the work-shops, with tools, lathes, all the means needed, and, too, the school-rooms, for how do your chronic insane differ from the little defective ones at Elwyn? Yours are, many of them, like these children. I would have the kindergarten methods, and modelling and patterning, and embroidery, etc. Let those who will not work watch those who do; use the contagion of example.

"My patient is not at once put in charge of a nurse. An assistant, male or female, a physician, is with him for three days or more (one of his own class or above it). He shall study the case, and quietly record its mental peculiarities. As the patient gets used to him, and less suspicious, he goes over him physically with extreme care. Then there is the report with the added statements on his certificate, every detail of life, business, habits. A consultation with the physician in charge follows, and a decision as to the mental, moral, and physical needs of the case, and, above all, in every instance, a written schedule as to how it is desirable that the day be spent; all of this the nurse shall read; I mean all of the notes. Is this too much? We closely imitate it in our own hospitals and in our private work. Every week for the acute cases the nurse turns in her written report as part of her work. How far the patient has lived up to the schedule; how far not. It is added to the case, and the cases are kept as indexed cards, not in cumbrous books.

"Of treatment I say no word. It would often include much that you do rarely use, and to which I have already alluded. You may have many means and many helps which we cannot employ except for the amply rich. Years ago I tried in vain to talk certain boards into having convalescent sea-side homes, not farms near the hospital; I utterly failed. Now, this is coming, but not as yet is the need felt to have those homes where the alterative change of air is complete, as by the sea.

"There is a steward for purchases and for care of farm-garden and grounds. The senior physician with no business cares, a trained neurologist, living in the city, spends two-thirds of his day in the hospital: he has only consultations in town. Then there are resident physicians in charge, who shall live in the house. On the female side it is a woman helped by women. After three to five years these aids should be transferred under a new and reasonable state system to another hospital; or, in an endowed hospital, changed yearly from one ward or group of patients to another. Here, alone, is rotation in office valuable. Under the chief are young physicians, internes who serve two years, and both classes compete to win these places, which are paid,—as to the younger internes but modestly. One resident is a pathologist. There is a bath-master; but in rotation a resident sees and becomes familiar with this service. We have, too, a skilled electrician. The nurses are taught massage, but there is one person who is, as to this, an expert. I would also have on the staff a city oculist and gynæcologist to be used on call, and, above all, I would have once a week a long consulting visit from outside neurologists. For this visit the staff should select cases of doubt or difficulty, and this should be a serious and formal matter. The men chosen should be paid, and well paid, for I shall ask from them help in research and in the training of nurses. And as to these latter aids, they should have very little pay the first year, and more and more as they elect to stay upon receiving their diplomas after two years.

"Again I wish to emphasize the fact that the nurse is by far the most

important part of my organization. How can you hope for the best help from the class we usually see in your wards? I could surprise you a little with the dismay and disgust expressed as to these agents by refined and educated men and women in their letters to me. A few minutes a day make your visits, and the rest of the time, where there is an attendant, is too often spent by your patients in society little above that of the cook or maid.

"One wing of my control building shall have a good library of medicine, a laboratory, rooms for pathological research, and also (as we have in the Infirmary here) a room for the study of such phenomena as reflexes, reaction times, with chronographs and the like.

"And now, the life, the soul, the driving power, shall be in the physician-in-charge. The training-schools, the meetings for organizing combined or individual research shall have his eager care. He shall possess the ingenuity to point out paths untrodden by discovery, the energy to lead on these and to put life and vigor and sympathy into all the work. Above all, he must be gentle, refined, and courteous and insist that good manners prevail. I have seen in asylum wards, and seen unrebuked, bits of discourtesy to a well-bred gentlewoman for which I would have dismissed a nurse on the spot.

"Of the rest of this great and quite possible organization, of the rewards for scientific work, of the extra compensations, or the medals for nurses who show courage or have exceptional success I cannot speak; nor of much else besides."

Polio-Encephalitis Superior Acuta, with Report of a Case. (*Journal of Nervous and Mental Disease*, April, 1894.) By Samuel Wolfe, A.M., M.D.

The author summarizes as follows: "I have in this paper reported a case of inflammation of the motor-cells of the nuclei of the third, fourth, sixth, and seventh nerves of infectious origin, in which the symptoms were diplopia, strabismus, and vertigo; the established symptoms directly due to the lesion, external ophthalmoplegia, cycloplegia, iridoplegia (mydriasis), and ptosis with diplegia facialis, giving rise to great alterations in speech; and with loss of smell and taste, incoördination, and sensory disturbances as indirect symptoms; the entire complement of symptoms being established in the course of less than three weeks after a duration of about ten days progressive recovery; classified as polio-encephalitis superior acuta, presenting probably the most completely typical case yet recorded."

Observations on a Chinese Brain. (*Brain*, Spring Number, 1894.) By C. Hubert Bond, B.Sc., M.B., C.M. (Edin.).

The brain belonged to a Chinaman, aged thirty-six, who was suffering from general paralysis, with delusions of grandeur. The patient died from an intercurrent attack of pneumonia seven weeks after his admission into

the hospital. The literature is said to consist of but seven cases, one having been described by Parker and Mills, and three by Dercum, all of Philadelphia. No mention is made of the one worked up by Hatch, of the same city, and published in the *Transactions of the Pathological Society of Philadelphia*, vol. xv. The descriptions of the remaining three are accredited to M. Benedikt.

The difference in shape appears to be chiefly due to the increase in the greatest transverse diameter as compared with the antero-posterior, the greatest width being fourteen centimetres (5.5 inches), and the extreme length fifteen and a half centimetres (6.125 inches). The cephalic index is therefore ninety, and the skull a markedly brachycephalic one. The weight of the brain is 1182 grammes (38 ounces), the diminution being especially seen in the cerebral hemispheres. The cerebellum weighs 163.2 grammes, and the pons and medulla together 23.3 grammes. Capacity of the hemispheres 822 cubic centimetres, cerebellum 141.7, pons and medulla 21 cubic centimetres, the proportion of the cerebral hemispheres to the cerebellum being but five to one; this is below that of the chimpanzee, even accounting for the fact that the atrophy may have produced some diminution of the cerebral convolutions.

There is no departure from the normal as regards the markings on the island of Reil, and the configuration of the cerebellum, pons, and medulla. While the number of brains described is entirely too small and of too low a type to justify general conclusions, the author believes that (1) there is a greater prominence given to furrows running transversely as compared with those in the antero-posterior direction. This has been a constant factor in all the specimens described, and is well seen in the present case by three large sulci running parallel with each other in both hemispheres,—namely, the central itself with the præ- and post-central sulci practically as distinct as itself. (2) The brain is here described as up to the standard as regards convolutional complexity, and in the frontal lobes even rather beyond the average. (3) The cuneate lobules, as in all of Dercum's cases, did not attain the normal size. (4) The small size and weight of the cerebrum in comparison with the cerebellum is noted.

There is no description of the interior of the brain, or of any microscopical findings.

The Spinal Cord in Pott's Disease. (*Medical News*, November 10, 1893.) By Charles W. Burr, M.D.

In considering this subject from the neurologist's stand-point the author defines Pott's disease pathologically as an osteitis, usually tuberculous, of one or more vertebræ, resulting in carious necrosis and caries. The nervous symptoms are not caused directly by the angular curvature and consequent narrowing of the canal. In by far the majority of cases they are due to inflammatory changes causing pressure upon and, later, organic changes in the cord.

The first change produced by the pressure is interference with the flow of lymph producing œdema and stasis of the fluids in the tissues. There results possibly poisoning, producing at first softening of the cord with, at the same time, an increase of connective tissue, which when sufficient causes sclerosis. The time at which these changes occur varies, and consequently the cord symptoms may either precede the deformity—or, indeed, any sign of bone disease—or may follow it. The liability to nervous symptoms varies with the region of the spine affected. The inflammation of the dura may be either simple or purulent. Ordinarily, the inner surface of the dura and the pia-arachnoid escape inflammatory changes till late in the disease, even though the cord is seriously disabled. This being so, we are able to say that the changes in the cord are not due to a tuberculous process in it, but to the mechanical effect of pressure and possibly the irritant effect of retained lymph. When the pachymeningitis invades the inner surface and the pia-arachnoid, another element is added to the destructive process.

The pressure exerts the same influence on the nerve-roots as on the cord, and we have the "root symptoms" and "cord symptoms" of Gowers.

The autopsy in advanced cases shows the cord decreased in size. The microscopical examination shows an increased amount of connective tissue, with an absence of many nerve-fibres, and sometimes with enlarged axis-cylinders. It is degeneration rather than inflammation. In severe cases a peculiar interstitial myelitis is found. The newly-formed connective tissue, which at first contains cells, later becomes changed into a dense reticulum, which much increases the hardness of the cord.

OPHTHALMOLOGY.

IN CHARGE OF CHARLES A. OLIVER, A.M., M.D.,
Philadelphia, Pennsylvania,
AND
EDMUND LANDOLT, M.D.,
Paris, France.

Description of an Optomyometer.—This instrument, designed by the Geneva Optical Company, of Chicago, U. S. A., is intended to measure the orbital muscles of the eye without exciting the accommodation and consequent convergence; to determine the strength of any particular muscle or set of muscles, and to ascertain the degree of prism necessary to relieve the weakness of the same; to measure the zone in which the eye is moved by the action of the orbital muscles; to diagnose the field of torsion; and to exercise any particular muscle with a view of strengthening the same.

As shown in the illustration, it practically consists of two tubes that are provided with eye-pieces. These tubes are mounted upon a fork that is attached to a pedestal. Fastened to the upper part of the fork, there are

two scales upon which the tube can be swung. In addition, there is a contrivance by which a vertical movement can be obtained.

After first getting the instrument into proper position so that the patient sees but one opening as with a binocular telescope, the degree of any existent esophoria or exophoria can be measured by depressing the left hand tube about five to ten degrees below the plane of the right hand tube. The patient's view is then directed towards a distant blank wall. If ortho-



Optomyometer.

phoria in that meridian exists, he will then see two openings, one above the other. If a lateral deviation be present, there is esophoria or exophoria. The amount of the deviation can be easily estimated by moving the right hand barrel of the instrument along the horizontal graduated scale until the openings become vertically placed to one another; this position being read for abducting or adducting prisms in actual degrees.

To estimate the field of torsion, two stenopæic slits are placed in the tubes and the barrels are brought together until the slits bend and appear as one. By rotating the slits, the strength of any oblique muscle can be estimated by observing the degree upon the rotating cell the moment that the two slits suddenly appear to cross one another.

To test the strength of the external or the internal muscles, two colored glass disks are substituted for the slits. The right hand tube is then swung to the right, when the patient's eyes will converge or diverge until the limit

of the scale is reached. The tubes are then returned to a parallel position and a horizontally situated twenty-degree prism is placed in the cell. After this has been done, the tube is again swung, when it will be found that the eyes will be farther converged or diverged. The strength of the prism is then increased until one of the colored disks passes outside of the patient's field of vision, and the degree is noted upon the scale. This noting, plus the power of the prism (reduced to actual degrees), shows the strength of the external or internal muscle.

To test the strength of the superior or inferior muscles, the left hand tube is swung up or down, this effect being increased, if necessary, by gradually increasing strengths of vertically-placed prisms.

When it is desired to exercise any weak muscle, it can be controlled so as to give exercise in that direction only, as in the case of torsion, when rotating the stenopæic slit the weak muscle is exercised and strengthened until the torsion disappears.

Desiring measurement of hyperphoria, the eyes should be held in a horizontal plane. If necessary, stenopæic disks may be placed in the eye-pieces of the instrument with their slits in a horizontal position, care being taken that the tubes of the instrument are also horizontal at the commencement of the test.

Injury to the Eyes from a Heavy Charge of Electricity. (*Archives of Ophthalmology* for January–April 1, 1894.)—Rivers, of Denver, Colorado, has seen a remarkable case of double injury to the eyes from the accidental short circuiting of an electrical force of five hundred and fifty volts through the right forearm. Besides extensive superficial burning of the face and other exposed parts of the body, the epithelial layers of both corneæ were rendered so markedly opaque that vision was reduced to mere perception of light.

By the use of atropine and the constant application of dry aseptic cloths during the first week. the epithelial eschars were removed *en masse*, leaving a perfectly clear underlying structure. This was almost immediately followed by a violent delirium which lasted several days. The atropine was discontinued.

A few days later, vision rose to one-tenth in the right eye and to one-half in the left.

Without any gross intra-ocular lesions except a slight retinal haze, a photophobia, which had existed from almost the beginning, persistently remained. A half-grain collyrium of pilocarpine was now employed. At this time, vision in the right eye equalled two-thirds of normal, whilst that in the left eye rose to almost perfect.

The patient was again seen several months later, at which time vision was found to equal nearly two-thirds in each eye, there being, as had been previously noted, an inability to retain this degree of vision for any length of time.

A Case of Sympathetic Ophthalmia Occurring Forty-two Years after the Loss of the Exciting Eye; Recovery with Useful Vision. (*New York Eye and Ear Infirmary Reports*, January, 1894.)—Weeks, of New York, cites the history of a most instructive case of sympathetic ophthalmitis, in which the serous character of the disease was more marked than the plastic. The patient, a healthy, robust man of forty-eight, stated that he had lost the sight of his left eye, as a result of corneal ulceration following an attack of rubeola, when he was but six years of age. The sightless organ remained quiet, and failed to cause any annoyance until six months before he was seen by Dr. Weeks, when, without any seeming provocation, it became red and painful for five or six weeks' time, to gradually subside, and to be followed by a series of mild relapses.

When first seen, the globe was about three-fourths normal size, and hard and irregular. There was some congestion with tenderness over the ciliary region.

About a month previously, the right eye, which had never experienced anything more than a slight photophobia and fatigue upon use, became congested and painful with rapid failure of vision. At the time of examination there was a sympathetic ophthalmia. This was shown by marked pericorneal congestion, cornea fairly clear, anterior chamber shallow, complete posterior synechia, iris muddy and thickened, depositions of lymph into the pupillary space, and vitreous opacities. Intraocular tension was increased, and vision was reduced to one-fiftieth.

The patient was immediately placed in bed and alteratives were given. Hot solutions of weak strengths of bichloride of mercury with instillations of weak solutions of atropine were used.

In three days' time the exciting eye was removed and eserine was substituted for the atropine. The mixed treatment of thirty grains of iodide of potassium daily and tri-daily inunctions of mercury was continued. Under this treatment, tension fell to normal in seventy-two hours' time, thus allowing the discontinuance of the eserine.

Whilst the varying glaucomatic symptoms continued, the eye became so much better under appropriate treatment that in three months' time vision rose to one-tenth of normal. The pupillary area became relatively clear, the lens was transparent, and though the vitreous was hazy, the disk, which appeared of its normal color, could be seen to have its outlines blurred. There was a reduction in the size of the retinal vessels.

Microscopical examination of the enucleated eye showed the cornea to be largely composed of cicatricial tissue with no evidences of recent inflammatory action. The sclerotic was thickened and wrinkled. The whole vascular tract was thickened by a dense infiltration of small cells (leucocytes), which also affected the retina. This tissue was also degenerated. Remnants of lens matter were found enclosed in a collapsed capsule. The vitreous was fairly clear. There was a glaucomatous cupping in the optic disk. The optic nerve itself was atrophic. The subvaginal

space did not appear to be particularly distended, and there were no collections of small cells in its vicinity. In the ciliary nerves, however, the nuclei appeared to be increased in number. Careful search throughout properly-stained specimens failed to positively establish the presence of micro-organisms (bacteria) in any part of the eye, though culture tests were not employed. There was no evidence of ossification of tissues.

The case is of value as being one in which the sympathetic inflammation followed some forty-two years after the destruction of an eye which had suffered from a non-traumatic type of suppuration of the cornea. In support of this assertion, the author says that in view of the want of any external injury, the exciting cause must have come from within, and that the condition which made the production of the inflammatory processes in the sympathizing eye probable, was undoubtedly the active inflammatory condition of the exciting eye some six months before the outbreak in the sympathizing organ.

Pulsating Exophthalmos: A Plea for Early Ligature. (*The Lancet*, February 27, 1894.)—Based upon a case of right post-ocular aneurism of either intra-orbital or intracranial type the result of a fall, which was successfully treated by ligation of the right common carotid artery, George Edward Walker, of Liverpool, makes a plea that in these days of aseptic surgery, the best treatment is the Hunterian operation of ligature of the artery leading to it, "and in these particular aneurisms, where the possibilities are so grave, where not only sight, but even life may be lost, our duty is not only to tie, but, without wasting time in futile experiments, to do as we did in this case,—tie at once."

Successful Removal of a Crystalline Lens that had been Dislocated into an Anterior Chamber. (*Transactions of the Texas Medical Association* for 1893.)—Hodges, of Galveston, has successfully removed an irritating dislocated lens from the anterior chamber of a sixteen-year-old girl, in whom a double congenital subluxation of the lenses had been diagnosed some three years previously.

After the administration of chloroform, the eyeball was fixed, and an inferior corneal incision was made. As the lens fell back behind the pupil upon the completion of the corneal cut, a downward and bloodless iridectomy was made and the lens was delivered without the loss of vitreous by means of a small scoop. Strict antisepsis was observed throughout.

In forty-eight hours' time the wound was united, and the conjunctiva was clear. The patient's recovery was uninterrupted.

Injections of Oily Solutions of Biniodide of Mercury in the Treatment of Syphilitic Affections of the Eye. (Les Injections de Solution Huileuse de Biiodure de Mercure dans le Traitement des Manifestations Oculaires de la Syphilis. *Annales d'Oculistique*, April, 1894.)—Parisotti,

of Rome, gives his experience in subcutaneous injections of oily solutions of biniodide of mercury in a number of cases of ocular disease from congenital and acquired syphilis.

From the results obtained, he thinks that such injections are of the greatest importance in the amelioration of the ocular complications of syphilis, and thus offer themselves as a distinct rival to subcutaneous injections of calomel. He states, however, that, when there is great danger and no time is to be lost, calomel is the better remedy.

Initial Lesions of Syphilis Affecting the Lid and the Conjunctiva. (Chancres Syphilitiques de la Paupière et de la Conjonctive. *Le Progrès Médical*, February 24, 1894.)—Vignes, of Paris, has seen a case of Hunterian chancre of the left upper eyelid. It was excavated, circumscribed, and irregular in outline. Its base, which was reddish-yellow in tint, was hard and parchment-like, giving a sensation of fibro-cartilaginous resistance to the touch. The surrounding portions of the lid were so tumefied and œdematous that the patient could not raise the lid.

Although the corresponding lymphatic glands were engorged, there was no pain and no surrounding inflammatory reaction. When seen, this condition had lasted for three weeks. The patient also suffered from mucous patches of the anus and the genital fissure.

DISEASES OF THE LARYNX, NOSE, AND SURROUNDING STRUCTURES.

IN CHARGE OF J. PAYSON CLARK, M.D.,

Physician for Diseases of the Throat, Massachusetts General Hospital; Physician to the Throat Department, Boston Dispensary.

Singer's Nodes. (*Journ. of Laryngol., Rhinol.*, etc., July, 1894.) By F. I. Knight, M.D.

These are small nodules on both vocal cords at about the junction of the middle and anterior thirds, following strain of the voice by a prolonged use of a wrong vocal method. Pathologically, the nodule is of the same nature as those occurring in the diffuse form (trachoma). The writer has found that by rest and astringents in these cases the voice has been so far restored that he did not feel justified in risking a cutting operation. If this treatment did not restore a useful voice, he would not hesitate to employ Rice's guillotine and remove the protruding portion of the growth, hoping that the remainder would be more readily absorbed.

Croup and all Croupous Diseases Curable by Pilocarpine. (*Journal of Laryngol., Rhinol., and Otol.*, July, 1894.) By Carl Sziklai, M.D.

The writer considers croup as a disease distinct from diphtheria. He

speaks of the well-known action of pilocarpine on the sweat and salivary glands, and concludes that it should have a similar effect on the glands of the mucous membranes. This conclusion he has proved practically to his own satisfaction. His doses of pilocarpine [presumably the hydrochlorate. —J. P. C.] are—

0 to 1 year, .01 to .02 gramme *pro die.*
1 to 3 years, .02 to .03 gramme *pro die.*
3 to 6 years, .04 gramme *pro die.*
6 to 10 years, .05 gramme *pro die.*
10 to 15 years, .06 to .07 gramme *pro die.*
Adults, .08 to .1 gramme *pro die.*

His conclusions are: 1. Pilocarpine is a specific for croup in the widest sense of the word, therefore for all croupous diseases,—*e.g.*, croupous laryngitis, croupous bronchitis, croupous pneumonia, croupous nephritis, etc. 2. Its action begins at once. In laryngitis crouposa cure is to be obtained in a few hours; in pneumonia crouposa, in two or three days. 3. It is indifferent whether it is given by the mouth or subcutaneously. It can be given in suppository. 4. In urgent cases subcutaneous injection is to be preferred. 5. The duration of the disease is notably shortened by the use of pilocarpine and the mortality reduced to *nil.* 6. In suitable cases, given early, it has a preventive action. 7. It can be given up to twice the official dose without fear of any ill effects.

The so-called Prolapse of the Ventricle of Morgagni. (*Archiv f. Laryngol. und Rhinol.*, vol. i., 1894.) By B. Fränkel.

There are two interpretations of this condition: one, that it is a prolapse of the mucous membrane lining the ventricle; the other, that it is the result of inflammatory changes. A prolapse of the mucous membrane of the ventricle has never been demonstrated, and the writer doubts the possibility of its occurrence. He describes a specimen where the appendix ventriculi was intact, while below was a hyperplasia of the connective tissue of the lateral ventricular wall and the upper surface of the vocal cord, which formed a tumor covered with epithelium protruding from the ventricle. Cushion-like growths are quite frequent in the ventricle, but do not often protrude. The writer is convinced that the condition commonly called prolapse of the ventricle is always due to a hyperplasia, which can have its seat in any of the walls of the ventricle. The frequent coincidence of pachydermia of the vocal cords with hyperplastic growths of the ventricle is striking. As to its occasional sudden appearance, it is possible that in a fit of coughing a sort of incarceration of the tumor may take place in the ventricular opening, the tumor swelling through venous stasis and becoming fixed in the opening. One will, under these circumstances, now much more than formerly, recognize operative removal of the tumor as the procedure indicated.

The Use of Antipyrin as an Anæsthetic in Diseases of the Nose, Throat, and Larynx. (*Archiv f. Laryngol. und Rhinol.*, vol. i., 1894.) By W. Wroblewski.

The writer finds antipyrin more efficacious for this purpose when used in combination with cocaine, as in the following formula:

℞ Antipyrin, 2 grammes;
Cocaine muriat., 1 gramme;
Aquæ destil., 10 grammes.

He has used this preparation in operations on the septum with very gratifying results as regards absence of pain. The writer has found that injections of a fifty-per-cent. aqueous solution of antipyrin in the region of the arytenoids in cases of phthisis laryngis quiets pain and dysphagia for about twelve hours. The writer has used these injections in curetting the larynx, amputation of the lingual tonsil, etc., the part being first painted with a ten-per cent. solution of cocaine. The largest amount of antipyrin injected at one sitting was 0.36 gramme, the smallest 0.18 gramme. The drug should be used with very great caution in children and in cases of consumption, arterio-sclerosis, typhoid fever, and heart and kidney affections. Its use should be avoided in diphtheria. Used with caution and in suitable cases Wroblewski has never seen any ill effects follow.

DERMATOLOGY.

IN CHARGE OF W. A. HARDAWAY, A.M., M.D.,
Professor of Skin-Diseases in the Missouri Medical College, St. Louis.

ASSISTED BY

C. F. HERSMAN, A.M., M.D.,
St. Louis.

Antipruritic Oil.—Bronson's formula for an antipruritic oil is—

℞ Acidi carbolici, ʒi;
Liq. potassæ, ʒi;
Ol. lini, ʒi.—M.
Sig.—Shake before using.

The Avian Origin of Certain Cases of Trichophytosis of the Beard.—Sabouraud (*The Medical Week*, July 20, 1894) describes a chicken, the feathers from the head and neck of which had disappeared, leaving the epidermis raised in the form of cones, in which the parasite was found in abundance. This form of the trichophyton gives pink cultures. The author has in three cases found this same fungus in the beard, and in each instance the recollection of the patient pointed to the avian origin of the affection.

A New Treatment of Guinea-Worm.—Emily (*Archives de Médecine navale*, June, 1894) recommends the following method of treating Guinea-worm, to supersede the old and unscientific and often dangerous method by traction. When the worm is still lying under the unbroken cuticle, a hypodermic syringeful of a solution of bichloride of mercury is injected at several points into the body of the worm, which can be felt through the skin. In a short time the poisoned worm is absorbed, just as a catgut ligature would be, and there is no further trouble. When the worm has formed an opening through the skin, the part protruding is injected with the solution, and several injections are made into the part of the worm still under the skin. In a few days the dead worm can be readily extracted.—*British Medical Journal*, July 7, 1894.

The Treatment of Seborrhœic Eczema.—Unna (*The Medical Week*, July 6, 1894) recommends for general use in the treatment of seborrhœic eczema the following paste:

℞ Oxide of zinc, ʒiss;
Precipitated sulphur, ʒi;
Powdered talc, ʒss;
Benzoated lard, ʒvii.—M.

The affected parts are first washed with soft soap dissolved in alcohol to remove the scales and crusts. A small portion of the paste is then rubbed into the skin, taking care to leave some of the paste spread over the skin after the inunction is complete. If this is well borne, five to ten per cent. of ichthyol may be added in cases where there is marked hyperæmia, or in anæmic cases five to ten per cent. of resorcin.

In cases where a mild prolonged treatment is necessary from irritability of the skin, the following treatment is recommended:

℞ Resorcin, ʒii;
Glycerin, ʒii;
Alcohol, ʒivss.—M.

One part of this solution is added to four parts of boiling water, and in this thin layers of cotton-wool are soaked and then placed upon the affected skin at night, a piece of rubber tissue being bandaged over this dressing to prevent evaporation.

In cases of generalized seborrhœic eczema the body is washed every evening with warm water, to each quart of which has been added from half a drachm to a drachm of resorcin, according to the age of the patient. In addition, the patient should wear a flannel shirt steeped in the same solution, and the sulphur paste mentioned above should also be used.

CLIMATOLOGY.

IN CHARGE OF GUY HINSDALE, M.D.,
Lecturer on Climatology in the University of Pennsylvania, Philadelphia.

The Open-Air Treatment and Mountain Sanatoria in France. (*Gazette des Hôpitaux*, July 31, 1894.) By Dr. A. Bournet.

France is well supplied with sea-shore resorts and sanatoria. A systematic organization for the establishment and maintenance of institutions at Pen-Bron, Hyères, Arcachon, and Banyuls-sur-Mer, under the direction of MM. Bergeron and H. Monod, has been so successful that the author is much encouraged in his efforts towards the establishment of corresponding mountain sanatoria. Recognizing the fact that sea-air and salt-baths are not suitable for all debilitated persons, for all scrofulous and tuberculous subjects, and also that these persons, and especially young children, will often rapidly recover their health if taken to the mountains, a strong plea is made for mountain resorts. "The true treatment of debility in childhood consists in ærotherapeutics, and this air ought to be an atmosphere of high or moderate altitude. This treatment is not yet practicable in our country. There is actually in existence only one organized winter station, that of Vernet, in the eastern Pyrenees. Established on the 13th of October, 1890, the sanatorium of Canigou is situated above the village and baths of Vernet, at an altitude of seven hundred metres. The institution is on the slope of the mountain Canigou, which is apart from the chain of the Pyrenees, and whose climate presents some of the characters of the Provence and Mediterranean." Very recently steps have been taken for the establishment of similar sanatoriums. One has been located on high level ground in a valley in Arrigas, Canton of Alzon. The sanatorium of Peyraube is especially designed for children below the age of four years, so liable to suffer from intestinal disturbances due to heat and dentition; generally feeble children will also be admitted. The institution will be open only from June 15 to September 15. There will be eventually one hundred beds, eighty for children alone and twenty for children accompanied by their mothers. The sanatorium of Peyraube will be especially an aid to the plan of treatment generally adopted by Dr. Pamard,—viz., that every child in early years stricken with gastro-intestinal catarrh during the summer ought to be carried to high elevations where the air is cool. Another institution at Sainte Radegoude, near Tours, has been founded by Dr. Edmond Chaumier, devoted to the air-treatment of children, delicate, puny, or tuberculous. This beneficent establishment, although started in 1890, had only four patients in April, 1892. To-day there are twelve, and soon the number will be doubled. This sanatorium is managed by a board of twenty-two members chosen from the contributors. Each attends for one month, and the nursing is provided by three sisters of charity. A physician visits the children at least once a week, and daily in case of illness.

Children from four to sixteen years of age of either sex are admitted from whatever source. Children designated by founders of the institution are admitted free; others pay, according to age, from fifteen to thirty francs a month. Residence in the sanatorium is for at least three months.

Another sanatorium has been established in the centre of the Canton of Amplepuis, in the Department of Rhone. It was possible to secure the Château Magny, the former residence of Marshal Vauban. It has an elevated site, picturesque, healthful, surrounded by firs, and well provided with water. A single wing of the château, with southern exposure, is able to accommodate nearly one hundred children. As the institution was opened in April, 1894, and is entirely charitable, it is not yet in full operation.

PATHOLOGY.

IN CHARGE OF ALLEN J. SMITH, A.M., M.D.,
Professor of Pathology in the Medical Department of the University of Texas, Galveston, Texas.
AND
HENRY W. CATTELL, A.M., M.D.,
Demonstrator of Morbid Anatomy in the University of Pennsylvania; Prosector to the American Anthropometric Society; and Pathologist to the Presbyterian Hospital, the Institution for Feeble-Minded Children at Elwyn, etc.

The Treatment of Diphtheria in Children by the Use of Serum of the Lower Animals Containing its Antitoxin.

(Zur Behandlung diphtheriekranker Menschen mit Diphtherieheilserum. *Deutsche medicinische Wochenschrift*, Nos. 17 and 18, 1893.) By Behring, Boer, and Kossel.

(Ueber Gewinnung und Verwendung des Diphtherieheilserums. *Deutsche medicinische Wochenschrift*, No. 16, 1894.) By Ehrlich, Wassermann, and Kossel.

(Ueber die Anwendung des Diphtherieantitoxins. *Zeitschrift für Hygiene und Infectionskrankheiten*, volume xvii., No. 3.) By Professor P. Ehrlich and H. Kossel, M.D.

(Ueber die Behandlung der Diphtherie des Menschen mit Diphtherieheilserum. *Zeitschrift für Hygiene und Infectionskrankheiten*, vol. xvii., No. 3, July 6, 1894.) By H. Kossel, M.D.

These investigators have sought the answer to the following questions:

1. *How is the Serum of one of the Lower Animals to be prepared so as to Contain the Antitoxin of Diphtheria in Known Quantities?*—The animal, preferably the goat, is rendered immune by the usual method, namely, the incorporation of an increasing number of dead diphtheria bacilli into the animal until a "*grund*" immunity is reached, and then the employment of an increasing number of live bacilli until a most virulent culture has been used. The strength of the antitoxin is determined as follows: The control

poison is made from old bouillon cultures of the diphtheria bacillus to which one-half per cent. of carbolic acid has been added, the poison being of such strength that 0.3 to 1000 grammes of body weight would surely kill the animal. For an animal of 2 to 300 grammes weight 0.8 cubic centimetre of the poisonous solution was employed,—*i.e.*, ten times the amount necessary to kill. The amount was mixed in a suitable dish with 0.4, 0.3, 0.2, etc., grammes of the serum of the animal which had been rendered immune. The mixture was usually increased in volume to 4 cubic centimetres by the addition of normal salt solution, and then immediately injected subcutaneously into the body of a guinea-pig.[1] Often on the next day, and always on the second after the injection, the symptoms and appearance of the animal indicated whether the proper dose had been employed. If the animal died, at the next trial, with another animal under like conditions, it would be necessary to employ more of the antitoxin. By this method animals were prepared in which 1.5 milligrammes of serum and 75 milligrammes of milk were capable of neutralizing 0.8 cubic centimetre of the poison employed. In order to have a standard, a simple normal antitoxin or immunity unit (Immunitatseinheiten,—I. E.) is considered to be of such strength that 0.1 cubic centimetre of the serum is capable of completely neutralizing 0.8 cubic centimetre of the poison as above prepared,—in other words, 1 cubic centimetre of the serum is said to be equal to 60 ordinary immunity units.

2. *What is the Best Method of using the Antitoxin?*—The serum should be injected as quickly as possible after the commencement of the disease and an excess of the antitoxin should be present in the body. The first dose in mild cases should be at least 200 immunity units. In severer cases, and in all cases in which tracheotomy has been performed, 400 units must be at once employed. The treatment is to be repeated on the same day or on the following day, according to the height of the fever, the pulse, and the local manifestations of the disease. The entire amount used may be 500, 1000, or even 1500 units.

The caution is given that these results have been obtained only by the use of serum which has been prepared as above described.

3. *What Results have Already been Obtained by this Method of Treatment?*—The treatment was applied in two hundred and thirty-three children under fifteen years of age, no selection being made of the cases brought to the various hospitals in which this method of treatment was being employed. The following tables sufficiently explain themselves, but it is well to call attention to the remarkable fact that of the seventy-eight cases treated in the first two days of illness only two died, and in each of these tracheotomy had to be performed, and that of the total twenty-three per cent. of deaths one-half were treated in so late a stage that death seemed most probable.

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[1] This is slightly different from the method first suggested by Behring and Kitasato, who injected the poison and the antitoxin separately into the animal.

TABLE I.[1]

Age.	Number of Cases.	Cured.	Died.	Per cent. of Cures.	Tracheotomy Cases.			Cures per cent.
					Number.	Cured.	Died.	
0–1	1	...	1	...	1	...	1	0
1–2	16	8	8	50	8	2	6	25
2–3	35	27	8	77	14	8	6	57
3–4	40	30	10	75	17	13	4	77
4–5	34	24	10	70	11	8	3	73
5–6	23	19	4	83	5	2	3	40
6–7	16	10	6	62.5	8	4	4	50
7–8	21	16	5	76	4	0	4	0
8–9	19	17	2	89.5	3	3	0	100
9–10	12	12	0	100	1	1	...	100
10–11	6	6	0	100	...	...	...	...
11–12	7	7	0	100	...	...	...	...
12–13	...	...	...	...	...	...	...	...
13–14	2	2	0	100	...	...	...	...
Not noted.	1	1	0	100	...	...	...	...
	233	179	54	.....	72	41	31	

TABLE II.[2]

Day of Disease.	Number Treated.	Cured.	Died.	Per cent. of Cures.
1	7	7	0	100
2	71 (9)	69 (7)	2 (2)	97
3	30 (7)	26 (6)	4 (1)	87
4	39 (14)	30 (10)	9 (4)	77
5	25 (11)	15 (5)	10 (6)	60
6	17 (7)	9 (2)	8 (5)	47
7 to 14	41 (23)	21 (10)	20 (13)	51
Unknown.	3 (1)	2 (1)	1	...
	233 (72)	179 (41)	54 (31)	77

As described by Wernicke, the serum of the lower animals may produce an urticarial eruption when injected into man. This was observed even fourteen days after the injection had been given, and most frequently followed the employment. The eruption of the serum of the dog and sheep was often accompanied by an intense itching which caused considerable annoyance to the children. When the serum of goats was used the eruption appeared less frequently, and was unaccompanied by the itching. No evil after-effects were noted.

There is no rise of temperature after the injection. The membrane soon becomes looser, and does not extend to areas previously unaffected.

The authors trust that by this method of treatment paralysis, nephritis, and other sequelæ will be diminished.

[1] A bacteriological examination showed the presence of Löffler's bacillus in every one of the cases tabulated.

[2] The figures in parenthesis refer to the number of cases in which tracheotomy was performed.

The local treatment of the cases was practically limited to cleanliness of the mouth. Great stress is laid upon sufficient and proper nourishment, this being often accomplished by a nutrient enema of milk, yelk of an egg, and wine. The bacteriological portion of the work was done under the supervision of Koch, Ehrlich supplying the serum for the later series of injections.

The Rhopalocephalus Carcinomatosus. (*Journal of Pathology and Bacteriology*, May, 1894.) By H. G. Plimmer, F.L.S.

This review is written in criticism of the monograph by Dr. Alexis Korotneff entitled, "*Untersuchungen über den Parasitismus des Carcinoms*," in which he has given the name of "*Rhopalocephalus Carcinomatosus*" to the adult gregarine pictured in the article. Among the reasons cited for not accepting this author's views are:

1. Dr. Korotneff appears only to have examined one case, and that one an epithelioma of the lip, where it is most difficult to make any interpretation as to what is really seen. This is not counterbalanced by the statement that the drawings of other works contain similar bodies to his own.

2. The method of fixing the tissue in a saturated solution of corrosive sublimate for a quarter to half an hour is not long enough, twelve to twenty-four hours being necessary; otherwise only the margins are fixed, and this may lead to misinterpretations of the microscopic picture. Instead of placing the tissue from this solution into thirty per cent. alcohol, as is proper, it was put at once into alcohol of seventy per cent. strength.

3. The author does not draw proper conclusions from the colors obtained by the use of Biondi's stain, this probably consisting in the fact that there is some fault with the solution, or that the sections are too thick. The latter would seem to be the better explanation, as the tissues were not embedded for the microtome, but cut free hand with a razor.

4. The drawings show cells and nuclei such as one does not see, for they are purely diagrammatic, often showing mere outlines of the cells and the nuclei. The zooit, sporozoit, amœba, and coccidium seem to take the stain in a capricious sort of manner, and Dr. Korotneff is silent as to cell invagination, fragmentation of nuclei, plasma cells, and mastzellen. The writer, therefore, considers that most of the parasites which are said to be represented by the dozens in any section are nothing more nor less than epithelioma cells.

5. Dr. Korotneff from this single case is led to believe that cancer is only malignant when it contains the rhopalocephalus.

The article is closed by a letter from Metchnikoff, who states that he has examined the preparations of Dr. Korotneff, and was much surprised at their imperfections; the pictures were entirely unclear, the staining quite diffuse, so that one could not rely at all on such preparations. "One thing only can I assert with confidence," says Metchnikoff, "that Dr. Korotneff takes for parasites the pseudo-coccidia, which most certainly have nothing to do with parasites. With regard to his amœbæ, etc., it is really impossible to

judge on account of the unclearness of the pictures. When one considers that these unclear pictures of Dr. Korotneff refer to only one case, and that an epithelioma too (that is, one of those tumors least qualified for it), it will be easily understood that his opinion can only arouse the greatest scepticism."

Note on the Rapid Method of Hardening and Preparing Tissues for Microscopic Examination. (*Journal of Pathology and Bacteriology*, May, 1894.) By Joseph Coats, M.D.

This author would suggest that a sharp knife be used to take an illustrative slice of the part under consideration of not more than two to four millimetres in thickness, and of comparatively small superficial area. This is placed in a test-tube containing some cotton at the bottom and half filled with absolute alcohol. The slice should be so placed in the tube that it shall lie flat, and not be distorted or curved. The tube having been placed in the water-bath, it is heated at a temperature of about 40° C. for one-half to one hour. Water from the hot tap may be employed, judging of the temperature by the hand. The tissue is now dried and placed on the freezing plate of the microtome in a large drop of anise oil. This preparation congeals at the comparatively high temperature of 45° F. to 75° F., the alcohol not interfering with the process. A few pressures of the ether-spray bellows are sufficient to freeze the oil into a white solid mass. The upper surface of the knife may be moistened with alcohol while cutting through; or, if the superficial area of the section be small, it may be cut dry, using a considerable sweep of the knife. The sections are placed in alcohol in order to remove the anise oil. They are next floated out in water and placed on a slide for staining.

Mayer's carmalum with a contrast stain of picric acid is especially recommended. The first solution is prepared in the following manner:

℞ Carminic acid, 1 gramme;
Alum, 10 grammes;
Water, 200 cubic centimetres.
Dissolve with heat. Add some preservative, as thymol.

The picric acid solution is made of seventy parts of alcohol, thirty parts of a watery solution of picric acid, and one-half part of hydrochloric acid.

The Influence of Small-Pox in the Parents in its Relation to the Susceptibility of the Child to Vaccination. (Influence de la variole des parents sur l'état de réceptivité des enfants à l'égard de la vaccine. *Archives cliniques de Bordeaux*, May, 1894.) By B. Auché and Delmas.

The susceptibility of the child to vaccination is considered from the following four stand-points: 1. Cases in which the father alone has had small-pox. 2. Cases in which the mother was attacked previous to con-

ception. 3. Where both the father and mother have had the disease. 4. Cases in which the mother is attacked with small-pox during pregnancy.

1. From ten observations in which the father had been attacked with small-pox for from thirteen months to twelve years, there appeared to be no diminished susceptibility to vaccination in the child. 2. In eight cases in which the mother had had small-pox prior to conception there were none in which vaccination was not successful either on the first or second trial. Undoubted cases, especially those by Lop, show that this need not be the result, more usually when the time of the attack has been short prior to the conception of the child. 3. Small-pox in the father and in the mother prior to conception does not render the child more immune than when the mother alone has been attacked. 4. If the disease is present in the mother during the course of pregnancy several alternatives are possible: (*a*) The disease is in an incubative state in the child: it is still susceptible to the vaccine for five to six days, more rarely three to four days, prior to the appearance of the eruption. (*b*) The child is born either with the eruption on it or scarred. It is, of course, refractory to vaccination. (*c*) Here belong those cases where the child has not had and does not get the small-pox. If it be born during the incubation, invasion, eruptive stage, and even the suppurative stage of the mother, it is able to be vaccinated with success. If it is born during desiccation or convalescence it is in certain cases refractory to vaccination, but more often susceptible. Later on the child is usually endowed with immunity which is not instantaneous, but seems to take a certain length of time for its production. The immunity once acquired is transitory, and lasts only for from several months to two or three years.

The authors believe the above facts would seem to be as applicable to small-pox as to the vaccine virus itself.

The Inoculation of Milch Cows with Cultures of the Bacillus Diphtheriæ. (*Journal of Pathology and Bacteriology*, May, 1894.) By E. Klein, M.D., F.R.S.

This article is written in reply to one published by Dr. Abbott in the first number of volume two of the above journal, and entitled, "The Results of Inoculation of Milch Cows with the Cultures of the Bacillus Diphtheriæ."

Dr. Klein states that he replies to this article (1) for the reason that one of the cows chosen by Dr. Abbott was tuberculous, and therefore not a fit subject for experimentation; and that the broth culture of the bacillus diphtheriæ used in the second animal only produced death in the guinea-pig, used as a control experiment, in about sixty hours, the quantity employed for this purpose being five-tenths of a cubic centimetre. The culture is thus not considered sufficiently virulent.

(2) Because Dr. Abbott and others who have reviewed the article only refer to two positive results obtained by the writer, and seem to be in total

ignorance of the striking experiments (which are described in the reports of the medical officer for 1890–91) obtained by Dr. Klein on eight other milch cows.

By placing Dr. Abbott's two negative cases against Dr. Klein's two positive cases described in 1889–90, any one might suppose that the experiments of the latter investigator were neutralized or very much weakened; but a negative experiment should never be as authoritative as a positive one, and instead of the two negative experiments being placed against but two positive experiments they should be considered as being placed against the entire ten positive experiments upon this number of healthy milch cows. It is shown by the experiments of Klein that it is possible not only to inoculate milch cows with the diphtheria bacillus, but also that after being thus inoculated to find the bacilli in the milk of such cows.

MISCELLANEOUS.

The Study of Anatomy by Frozen Sections.[1] (*Canadian Practitioner*, May, 1894.) By A. Primrose, M.B., C.M. (Edin.); M.R.C.S. (Eng.), of Toronto.

The introduction of the study of frozen sections, both vertical and longitudinal, in the anatomical department of a medical school is considered by the writer as having now become an absolute necessity.

If these cannot be obtained, a series of models showing such sections should, at least, be secured. The study of these preparations is by no means to be considered as taking the place of dissecting, but rather as supplemental to the use of the scalpel by the student. At the University of Toronto, besides having frozen sections accessible to the student in the dissecting room, lantern slides, prepared from photographs of such sections, are thrown upon a screen by means of a projection lantern, in order that the study of anatomy may be facilitated.

The normal curves of the spinal column are clearly indicated, though not pronounced, in the mesial longitudinal section represented in Fig. 1. The spinal canal is opened up and the cord, showing the cauda equina with the nerves, is exhibited. The difference in the degree of obliquity of the individual spinous processes can be noted. The immature condition of the skeleton is shown by (*a*) the persistence of a line of cartilage between the odontoid process and the body of the axis vertebra; (*b*) a thin layer of cartilage between the basi-sphenoid and basi-occipital; and (*c*) the cartilaginous intersections between the component parts of the body of the sternum. The frontal and sphenoidal sinuses are well developed in the

[1] Cuts kindly loaned by the publishers of the *Canadian Practitioner*.

skull. The falx cerebri, a slice from the inner surface of the left cerebral hemisphere, and nasal septum having been removed, the cavity of the lateral ventricle and the meatuses of the nose are shown. The relations of the cord, medulla, cerebellum, and cerebrum are well shown, while the observer notices the tongue, palate, jaws, larynx, trachea, tip of the epiglottis, and the isthmus of the thyroid. The situation of the diaphragm, with the heart above and the liver beneath, is noticed. The distended bladder, infantile uterus, and part of the abdominal portion of the alimentary tract are also shown.

The remaining plates, nine in number, are representations of a series of transverse sections of a child six years of age. Fig. 2, the first of the series, taken at the level of the second dorsal vertebra, shows the clavicles split longitudinally and the extent to which the apices of the lungs extend above the clavicles. Immediately in front of the vertebral body is seen the trachea, behind which, towards the left side, is the œsophagus. The great vessels at the root of the neck are said to be clearly demonstrated in the preparation, but not well reproduced in detail on the plate. It can be observed that the three primary centres of the vertebra have not yet united, the neuro-central sutures being still evident.

Fig. 3 is a horizontal section at the level of the fifth dorsal vertebra, and is the best of the series. It demonstrates the descending aorta in front of the body of the vertebra, towards the left side. Lying between the aorta and the vertebra, almost in the middle line, is the œsophagus. On each side the bronchus is seen in section, and in front of these structures the pulmonary artery is shown as it leaves the right ventricle and divides into the right and left pulmonary arteries. Immediately to the right of the pulmonary artery, before its division, is seen the first part of the aortic arch, and to the right of this again the superior vena cava. A portion of the right auricular appendix lies towards the front. The lungs are evident, occupying a position laterally. The humerus, with the transverse section of ramus muscle of the arm, are seen at the sides of the section.

Fig. 4 represents a section through the ninth dorsal vertebra, and illustrates the relations of the heart to the lungs within the thorax. The cavities of the heart are opened up, and the descending thoracic aorta is evident. The pericardium is clearly demonstrated. The cartilaginous inferior angles of the scapulæ are shown, and the ribs, having been cut obliquely through the tenth dorsal vertebra, appear in the section.

Fig. 5 illustrates the position of the lungs, diaphragm, liver, and stomach. The fundus of the stomach—this organ being empty—is seen to rise under the left dome of the diaphragm to a higher level than that of the œsophageal opening. The aorta is visible, and the inferior vena cava is observed almost surrounded by liver substance. The section has passed through the bases of the lungs posteriorly, and these are represented as two crescentic structures, one on each side of the vertebra, separated by the diaphragm from the abdominal viscera.

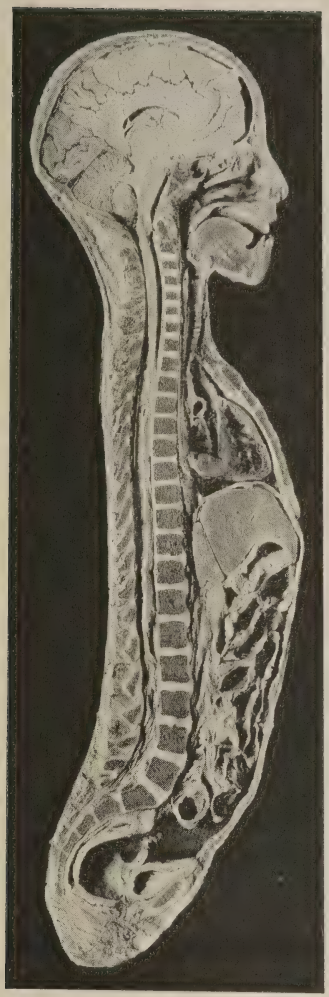


FIG. 1.—Vertical mesial section of the body of a girl aged nine years, a little to the left of the middle line.



FIG. 2.—Horizontal section at the level of the second dorsal vertebra of the body of a girl aged six years.

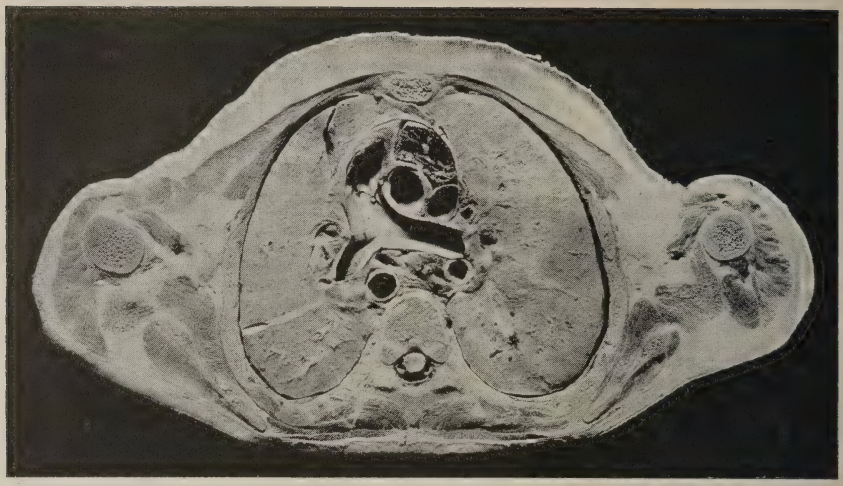


FIG. 3.—Horizontal section at the level of the fifth dorsal vertebra.



FIG. 4.—Horizontal section at the level of the ninth dorsal vertebra.



FIG. 5.—Horizontal section at the level of the tenth dorsal vertebra.



FIG. 6.—Horizontal section at the level of the disc between the eleventh and twelfth dorsal vertebræ.

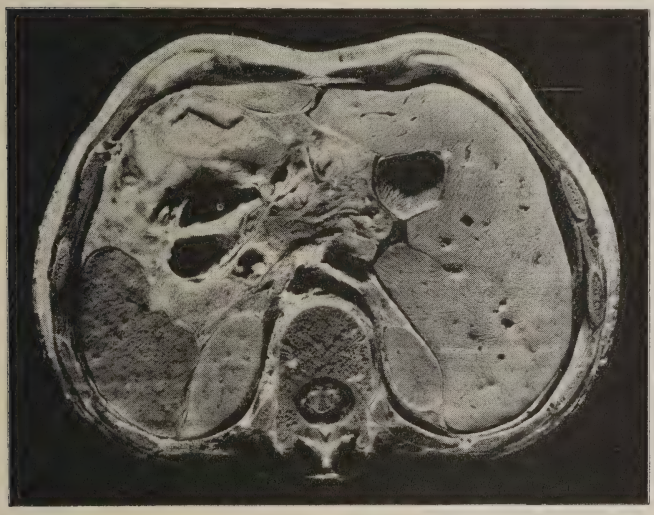


FIG. 7.—Horizontal section at the level of the first lumbar vertebra.



FIG. 8.—Horizontal section at the level of the disc between the second and third lumbar vertebræ.



Fig. 9.—Horizontal section at the level of the disc between the third and fourth lumbar vertebræ.

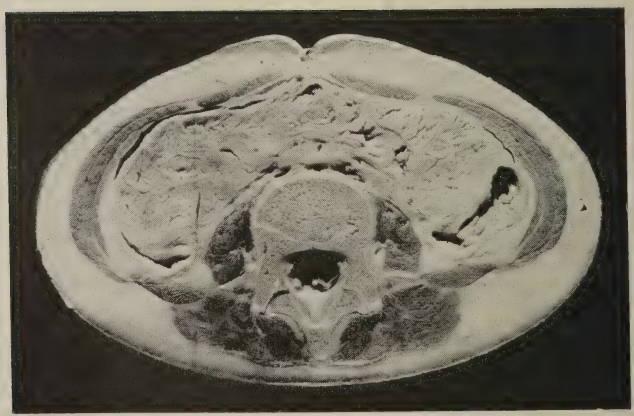


Fig. 10.—Horizontal section at the level of the fourth lumbar vertebra.

The relations of the liver, stomach, and spleen are shown in Fig. 6, which represents a section at the level of the disk between the eleventh and twelfth dorsal vertebræ. The stomach, as stated above, being empty, appears in a contracted condition, while the liver passes over to the left side of the body, in front of the stomach. The left lobe of the liver is stated to be very variable in its situation, according to the degree of distention of the stomach. The large blood-vessels are readily recognized, and the diaphragm can be traced around the greater part of the section, a portion of it intervening between the aorta and the vena cava. The section is immediately above the aortic opening in the diaphragm, and considerably below the level of the opening for the vena cava; consequently the section of the aorta appears behind (or above) the diaphragm, while the section of the vena cava is shown in front (or below) that structure.

The intimate relations of the liver, spleen, pancreas, kidneys, and intestine are shown in Fig. 7, which has been cut through the region of the first lumbar vertebra.

The nearness of the kidneys to the parietes is seen by reference to Fig. 8, which shows a section through the disk between the second and third lumbar vertebræ. The liver, colon, and aorta appear also in this section.

Figs. 9 and 10 show the relations of the parts in the neighborhood of the fourth lumbar vertebra. The colon and small intestine are here chiefly seen.

H. W. C.

The Discovery of a New Gas in the Atmosphere. (Verbal report to the British Association for the Advancement of Science; *Nature*, August 16, 1894.) By Lord Rayleigh and Professor Ramsay.

The important announcement is made by these distinguished chemists that they have isolated by two distinct processes a new gas from atmospheric nitrogen. This new gas is found to be inert and denser than true nitrogen. The first method employed was that used by Cavendish in his demonstration of the composition of nitric acid. Air mixed with oxygen is submitted to electric sparks in presence of alkali until no further contraction takes place. The excess of oxygen is then absorbed by pyrogallol. That the residual gas is not nitrogen is inferred from the manner of preparation, and from the appearance of its spectrum. A second method giving much larger quantities of the new gas depends upon the removal of nitrogen from deoxygenated air by passing it over heated magnesium. When this process was allowed to continue, the density gradually rose to 14.88, 16.1, and finally to 19.09. At this stage the absorption seems to have reached its limit, indicating that the new gas amounts to about one per cent. of the nitrogen of the atmosphere. When the gas thus prepared was sparked with oxygen there was little or no contraction. It has been found that no liquefaction occurs when the gas is compressed at atmospheric temperatures.

H. W. C.

FORENSIC MEDICINE.

IN CHARGE OF LORENZO D. BULETTE,
Of the Philadelphia Bar.

INFAMOUS CONDUCT IN A PROFESSIONAL RESPECT.

A REGISTERED physician, who by his presence and assistance acted as cover for and enabled an unqualified person to carry on the business of a medical electrician, and to practise as if he were a duly qualified physician, was adjudged by the General Council of Medical Education and Registration of the United Kingdom, guilty of infamous conduct in a professional respect and his name was removed from the medical register.

The General Council, which was created by the Medical Act, 1858,[1] and composed of thirty-five members variously appointed, derived its jurisdiction to regulate the registration of medical practitioners from section twenty-nine of the act, which is as follows: "If any registered medical practitioner shall . . . after due inquiry be judged by the General Council to have been guilty of infamous conduct in any professional respect, the General Council may, if they think fit, direct the registrar to erase the name of such medical practitioner from the register."

In pursuance of this authority, the General Council held an inquiry into the conduct of Doctor A., the accused, a duly qualified and registered medical practitioner in London, on a charge preferred by the Medical Defence Union for infamous conduct in a professional respect. The notice of the proposed inquiry, furnished Doctor A. by the General Council, stated the complaint against him as follows: "You, being a registered medical practitioner, do act as cover of, or by your presence, advice, and assistance, do enable one, H., an unqualified person, to carry on the business or profession of a medical electrician, and to practise as if he were duly qualified, under the style of the Medical Battery Company, Limited."

The Medical Defence Union, which was the prosecutor of the complaint and furnished the evidence in support thereof, is a body corporate, not formed for the purpose of profit, but is, as its name signifies, a defence union, the objects of which are, *inter alia*, to support and protect the character and interests of medical practitioners practising in the United Kingdom; to promote honorable practice, and suppress or prosecute unauthorized practitioners.

[1] 21 and 22 Vict., chap. 90, as amended by 25 and 26 Vict., chap. 91, and 49 and 50 Vict., chap. 48.

The General Medical Council, at the meeting called for that purpose in which all the parties were represented by counsel, and after an examination of the accused and hearing depositions and evidence in support and in defence of the charge, announced, at the close of the proceedings, their decision as follows: "That the accused committed the offence charged against him; that the offence was, in the opinion of the Council, infamous conduct in a professional respect; and that the registrar be directed to erase his name from the Medical Register."

The accused moved for an injunction to restrain the General Medical Council from removing his name from the register of medical practitioners, and from publishing the resolutions which they had passed with respect to his conduct.

It was contended, in support of this application for an injunction, that there was nothing contained in the complaint which would justify the General Medical Council in exercising the powers given to them by section twenty-nine; and there was a good deal of verbal criticism ably pressed upon the court to the effect of what is said in the notice. It was said that there is no allegation that Mr. H. is practising as if he were a duly qualified medical man. It only says, "as if he were duly qualified under the style of the Medical Battery Company," and that all that Dr. A. was supposed to have done was that he assisted him to represent himself as a medical electrician.

Says the court, by Cotton, L. J., "I cannot read it in that way. We know what a duly qualified medical man is in the act. A person is duly qualified if he is on the register, and in that respect duly qualified to obtain the benefit of the act, as regards the privileges which are conceded to those medical men who are on the register; and I have no doubt that this notice does state that which would justify the General Medical Council if they were satisfied that it was supported by the facts in coming to the conclusion that an offence had been committed, coming within the words of the act, 'infamous conduct in a professional respect.' And it was found that he had been guilty of the acts charged against him, and there was a direction to erase his name from the register."

And, continuing, the court said,—

"There has been a good deal of question as to what took place on the inquiry, and we have had the evidence which was before the General Medical Council brought before us. In my opinion, it would be wrong to consider whether the General Medical Council arrived at a right conclusion on the evidence which was brought before them. The General Medical Council cannot, strictly speaking, take evidence. They cannot take evidence on oath. They cannot take evidence which we as lawyers have to consider as evidence. They have statements made before them in support of any complaint which is made, and also they have statements made on the other side by the medical man against whom the complaint is made, and if it is once established that the complaint

made before them does involve a matter in respect of which they can exercise the jurisdiction given them by section twenty-nine, then I think we ought not to look at the evidence or in any way consider whether they have arrived at a right conclusion. Of course, if it was alleged and proved before us that they had acted corruptly, if it was proved that there was no statement made before them on which they could reasonably and honestly arrive at the conclusion at which they did arrive, then, I think, we ought to consider it to see whether the fact that there was no statement which could justify the conclusion was such evidence as, if not displaced, would lead us to the conclusion that the council had not acted honestly with respect to the charge brought before them, but had acted from some other motive. But although there were some allegations in the affidavit of the plaintiff in this case that there was prejudice against him, that point was not pressed upon us at all by counsel, nor was it in any way supported by anything which was brought before us. Doctor A. seems to have had a most perfect consideration of his case. The complaint was brought forward in the ordinary mode required by the rules and regulations of the General Medical Council. He was there; he was represented by his solicitor, and he brought his own witnesses,—that is to say, those who with him were to make statements in support of his contention, that in his conduct he had done nothing which was infamous in a professional respect; and everything was heard, most fully heard, and considered, and then the council arrived at the conclusion at which they did arrive. In my opinion, that being so, we cannot consider whether they are right or wrong. That must be left to them. In my opinion, therefore, the ground taken in support of this application for an injunction fails, because, I think there was a charge which justified the General Medical Council in making the inquiry under section twenty-nine, and there was no reason for suggesting that the proceedings were improperly conducted by them."

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Manuscripts, exchanges, and books for review should be addressed to the Editorial Office, 3455 Woodland Avenue, Philadelphia.

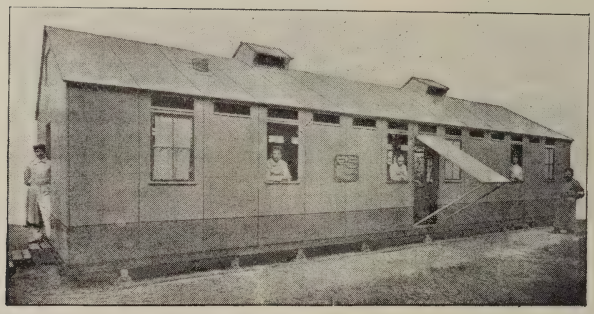


FIG. 1.—Portable hospital (Doecker pattern) as adopted by the Imperial German government for use in infectious diseases and warfare.



FIG. 2.—Dr. zur Wieden's hospital, with open walls for use in summer.

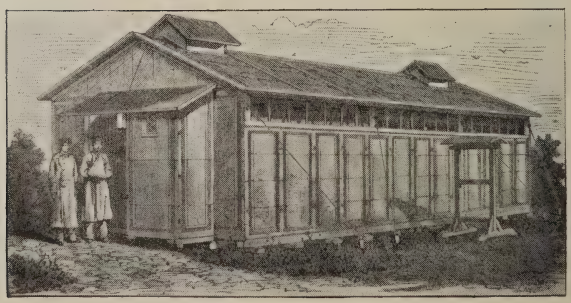


FIG. 3.—Portable hospital (Dr. zur Wieden's pattern), with thick walls for winter.

INTERNATIONAL
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ORIGINAL COMMUNICATIONS.

PORTABLE HOSPITALS FOR USE IN THE FIELD AND IN EPIDEMICS.

BY F. W. ELSNER, F.R.C.S. (IRÉL.),
Late Surgeon-Captain, Victorian Military Forces, Sydney, New South Wales.

A DISTINCT advance has been made in the direction of providing better hospitals of the third line for the German Imperial Army, as well as for the reception of cases of infectious diseases liable to occur during the progress of a war, and which, becoming transplanted from the armies to the unfortunate residents, have sometimes decimated whole districts. Impressed with the vital importance of these hospitals, I welcome the opportunity of bringing this matter to the notice of our American brethren through the INTERNATIONAL MEDICAL MAGAZINE.

The hospitals to which I desire to draw attention, however, are not alone destined to play an important part in the next European conflict, which it is to be devoutly hoped will not take place in our generation, but they stand unrivalled for use by boards of health, municipalities, and other corporations charged with the duty of dealing with outbreaks of infectious disease within their districts. They have already been in use throughout Germany for that purpose, notably during the late cholera epidemic at Hamburg. Their use materially aided in checking the epidemic.

No one, to my knowledge, having hitherto brought this matter under notice in any extensive manner, and as I believe that we have now available what must prove an enormous advantage in the endeavor to stamp out infectious diseases, I essay to deal with the subject in as exhaustive a manner as possible.

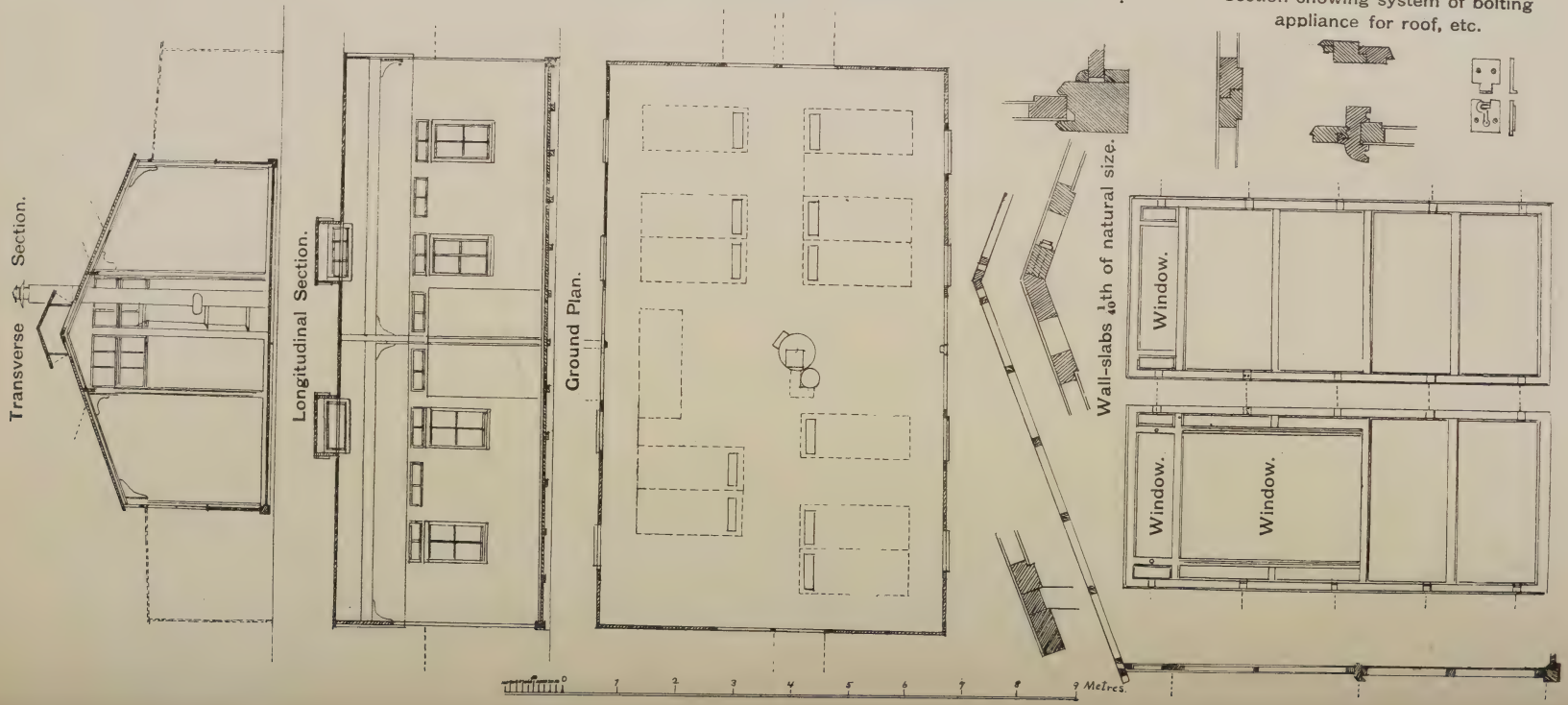
Having had the honor to serve in the German army myself from 1874 to 1878, at Hanover, in the Horse Artillery, all matters concerning that great organization have ever since possessed for me the greatest interest. Moreover, during my service as medical officer to the Victorian military forces, ambulance matters engrossed my attention constantly. When I therefore saw the announcement in a German medical print of a book entitled "Die transportable Lazareth-Baracke," edited by the great Von Langenbeck, published some four years ago, I at once ordered a copy, and this paper and the accompanying plans and illustrations are based upon the inspirations derived from a close study of its subject-matter. To say less than this by way of acknowledgment would be but a poor tribute to the memory of the great departed military surgeon; and Americans who have visited Germany and who have received from him, in his quiet and unobtrusive way, that welcome and courtesy which is so characteristic of German scientists in their bearing towards foreign visitors, are not likely to resent a passing reference to the genius of the great-hearted man.

"Die transportable Lazareth-Baracke" is a report upon the results of two international competitions, held under the auspices of the Geneva Red Cross Society, to determine the winners of two prizes offered by the late Empress Augusta, for (*a*) the best form of portable field hospital for use in the third line in warfare, and (*b*) for the best equipment of such a hospital. The competitions were held at Antwerp and Berlin (the latter in 1888) respectively, and resulted in the award being made to the Doecker pattern hospital for the Antwerp Exhibition and to the equipment displayed in the same hospital afterwards at Berlin. This hospital and equipment was then at once adopted by the German War Department as its standard, and its stock of hospitals was made available to civil authorities throughout the land for use in epidemics, as much to test its reliability as to check the ravages of infectious diseases. In no respect has the Doecker Hospital failed to justify the award of the international commission that made it, and almost every day makes it plainer that in it we have the solution of the infectious-diseases difficulty once and for all.

The conditions laid down by the commission to be fulfilled by the competing hospitals were complied with *in toto* by the Doecker pattern alone. With regard to the equipment, the commission was placed in a more difficult position by the appearance upon the scene of Surgeon-Major Warton's "tortoise" field hospital, an *ambulance volante* of the highest order, which was so complete and whose merits were of such a deserving character that, although its utility in dealing with infectious diseases was not so apparent, the commission could not overlook its importance as a war hospital for an advance corps in actual warfare, and therefore divided the prize equally between the English and the German competitors.

I must, however, leave the fascinating subject of Surgeon-Major Warton's tortoise equipment for the present, as it could never be used in connection with the subject I have at heart. Infectious diseases are not for

Portable Hospital (Doecker Pattern).



treatment under canvas, the material of which the tortoise tent is composed, unless one is prepared to burn the canvas when the epidemic is stamped out, or something is invented to render it fire-proof and germ-resisting, or capable of disinfection by germicides. And whilst canvas in hot weather is a fair housing for patients suffering from infectious disease, it is expensive; you must have a fly for summer use in countries like Australia, and a flooring of some kind. The life of a canvas hospital is that of a butterfly; for when you have used it once, it is done for. By way of illustration: When I was on the medical staff at the Alfred Hospital in Melbourne, Victoria, typhoid was very prevalent, and the board of health, with our co-operation, erected a canvas and wood fever-camp in our grounds to provide for the extra strain upon our hospital resources, which were insufficient to meet the demands for beds. Cases got well like magic; the death-rate was low. The season was summer. All through the winter these erections remained on the spot, exposed to all the changes of the weather. When the succeeding summer brought its quota of typhoid patients with it, it was found that the cases did not do so well in the tent as heretofore, and the mortality increased. The third summer the tents had to be abandoned to their fate, as they could not be rendered aseptic by any process then known to science,—except, perhaps, fire. And, as no funds were available for their removal or disinfection, the poor old tents had to hold their own until wind and rain had gradually disintegrated them, and they resembled the tattered gum-trees beneath which they stood, their rags fluttering in the sad winds, like the gum-trees' strips of melancholy bark, for many a long winter's day.

Now, what have we in the Doecker Hospital? A building composed of material that is germ-proof, fire-proof, and capable of disinfection, *ad infinitum*, by chemicals. A building that is cool in summer and warm in



Portable Hospital (Doecker's pattern).

winter; that is portable and capable of being put up or taken down by a few men in a few hours; capable of being carried by railway, wagon, or pack-horses, and which will provide twenty beds in winter or eighteen beds in summer time, at a moment's notice. It carries within itself all modern hospital requirements, and when erected can rely upon its own resources,

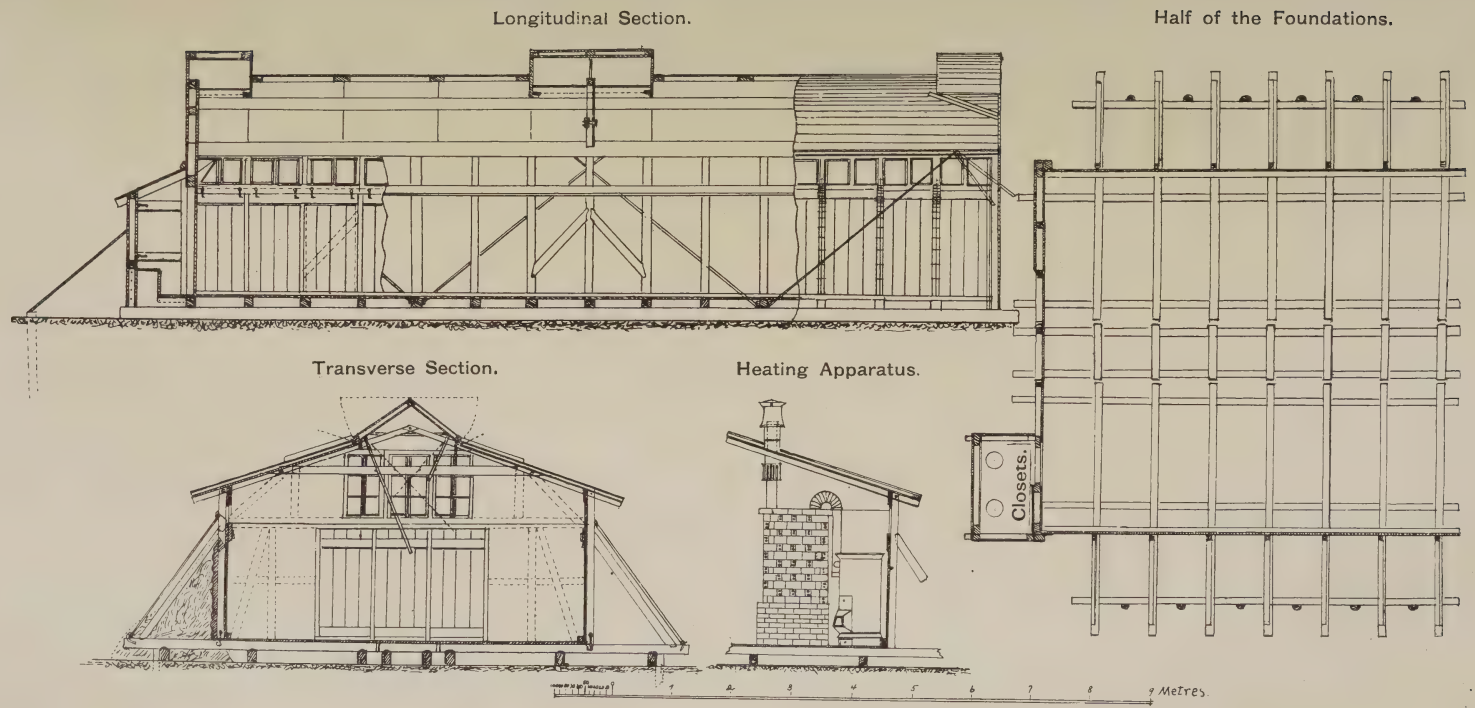
even if no other habitations are at hand. If an epidemic breaks out anywhere on the American continent, all you have to do is to wire to head-quarters for one, two, or more hospitals, which on arrival are unpacked and erected at once. Fill them with patients as required, and when your epidemic is stifled, take them down again, disinfect and repack them, and return to head-quarters.

The life of such a hospital is an unknown quantity; *cæteris paribus*, it might last for twenty years. If, on the other hand, you want to erect one permanently, the matter is simple enough. Level your site, asphalt it if you like, and drain well; then erect your hospital and put a fence around it. It is storm-proof and will resist a tornado; it is more water-proof than a brick house, and if any moisture should appear, simply wipe the walls down with a dry, aseptic cloth. Can anything be more simple?

It is, we will say, required to use our model in actual warfare. The army corps moves into the field with its usual equipment of medical aid for the first line, and ambulance and dressing stations for the second line, whilst in a well-sheltered position not too far from the dressing-station the P. M. O. erects his third-line hospital, independent of all his surroundings, as soon as an action has commenced. In a short space of time the patients from the second line will be pouring in; if there is insufficient accommodation in the one pavilion, up goes another very quickly, until all the wounded are safely housed or the action is over. When the corps advances again, the wounded in their third-line hospitals are left behind, snug and comfortable, in charge of the staff detailed for such duty; and fresh third-liners are erected as soon as the troops go into action once more. As soon as the hospitals in the rear are depleted of their patients, either by sending them on to their corps or to the base to be invalided, the attendants take down and disinfect the whole hospital, piece by piece, repack it in the boxes that have formed the floor while in use, and send it forward again with as little delay as possible.

Thus our wounded in future will be quite independent of the inhabitants of the countries through which an army must pass on its way to the front; it will no longer be necessary to utilize churches, school-houses, barns, convents, etc., which used to be so many charnel-houses, the remembrance of the scenes occurring therein,—a hideous nightmare will alone remain from henceforth. In the Franco-German war more soldiers were disabled by the infectious diseases than were wounded in action; it was impossible to prevent these diseases from being conveyed to the inhabitants, owing to want of isolation hospitals, or even of hospitals, properly so called, for the third line at all, and the resulting complications were so terrible that the humanity of Europe was stirred to its depths. This danger has now been overcome by the Doecker pattern hospital, which is the direct outcome of the agitation started in favor of improving the condition of the wounded, as well as for the protection of the inhabitants themselves, after the Russo-Turkish war had once more called attention to the existing fearful state of affairs.

Portable Hospital (Dr. zur Nieden's Pattern).



Foremost in the line of agitators was the Empress Augusta herself, who, as aforesaid, offered a large money prize for international competition. The results are truly brilliant: we have not only the Doecker pattern as the best all-around hospital for our requirements in peace or war, but we have Surgeon-Major Warton's flying ambulance, which could follow up the rapid flying columns of a Gourko or a Skobeleff with ease, and be of the greatest possible service to a Sheridan or a Roberts on the march to Kandahar. We have, too, reliable data concerning the successful use of huts, hospitals, and stables, erected for the suffering men and beasts during the occupation of Herzegovina and Bosnia by Austria not many years ago; these were after the model exhibited by Tollet at Antwerp, and, whilst not gaining the prize, will again be found useful in future expeditions of a similar kind. The Tollet system is, I believe, pretty well known; it well fulfils certain indications, but cannot be further considered here. The hospital of Dr. zur Nieden, however, seems to be so admirably adapted for use in hot climates, with its removable walls, that I append two illustrations (see Frontispiece) and a ground plan which will show its advantages. It is also somewhat cheaper than the Doecker hospital, the walls of which are of a species of felt, which is manufactured by a secret process. Although not a prize-taker, zur Nieden's hospital would be very useful in the treatment of epidemics, whilst the more perfect Doecker fulfils other indications essential in a field hospital.

As will be seen by the ground plan of the Doecker system,—which also bears the names of Christoph and Mumack, Copenhagen, they being the actual prize-takers in the equipment competition, whilst their display was made in a Doecker hospital,—the pavilions can be constructed of any size desired, with closets and rooms for the surgeon and nurses, and all other necessary adjuncts of a complete hospital. The ordinary measurements are, for a hospital of twenty beds: Length, 50 feet; height, $6\frac{1}{2}$ to $7\frac{1}{2}$ feet; width, $16\frac{1}{2}$ feet; air space 170 cubic metres. The building cost about one hundred and fifty pounds at Berlin.

There remains little more to be said in favor of portable hospitals for use in dealing with epidemics. Nations not imminently in danger of war, perhaps, need not lay in a stock of third-line hospitals at once. Yet since the same building will be suitable alike for use in peace or war, no nation will in future have any excuse to offer if caught by an epidemic and found wanting in hospital accommodation. Human nature likes to do its charity on a grandiose scale, and to gaze upon a magnificent, many-storied hospital building as a testimony to its public benevolence. But human nature will have to come down to hard, practical facts taught through bacteriology and practical acquaintance with hospital gangrene, pyæmia, erysipelas, and wound-fever, not to speak of puerperal septicæmia and all its horrors. Infectious diseases must be isolated and dispersed, not concentrated in buildings of more than one story in height; the life-history of buildings used in the treatment of such diseases should be short; they serve their purpose for a time,—giving place to others rising phœnix-like from their ashes.

But, "for the soldier," says Von Langenbeck, "the best that you can give him is not good enough." Impartial judges will agree with me that the Doecker hospital does not leave him much to desire.

If it is once realized that we can combat infectious diseases successfully with the aid of small, isolated hospitals, much will have been accomplished; the frequency with which, of late, pavilions have been constructed in lieu of two-storied wards shows that the teachings of Lister, Koch, and Pasteur are not altogether ignored; still, more is needed. Cholera should not be able to devastate us periodically, as it has done so often.[1]

A NEW AND RAPID METHOD OF ANÆSTHESIA.

BY WILLIAM S. MAGILL, A.M., M.D.,

Chicago, Ill.

For many years surgeons have sought to shorten the interval preceding unconsciousness, which is so long in cases of anæsthesia with chloroform or ether. Again, the particular dangers attaching to each of these agents have led to many experiments with a view to diminishing such risks. As a result the mixed methods have been proposed,—as the alcohol-chloroform and atropo-morphine-chloroform in France, and the protoxide of nitrogen-ether in England. Certain of these methods are extensively recommended in America, but experience has shown that these mixed methods have their inconveniences, and are not adapted to every case.

In July, 1892, Drs. Hartmann, Bourbon, and the author commenced to employ a different method, based on the physiological action of ethyl bromide to induce a rapid anæsthesia without danger,—this unconscious condition to be retained by the use of chloroform.

Up to October, 1892, sixty-six patients in the surgical wards of Professor Terrier, at l'Hôpital Bichat in Paris, had been operated upon under this method of anæsthesia. At that date Professor Terrier communicated the *modus operandi* to the Société de Chirurgie de Paris. This communica-

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[1] It will hardly be credited that in the fair city of Sydney to-day there is being finished a building several stories high, the Sydney Infirmary, which was commenced some fifteen years ago on plans that are now obsolete. The naked foundations and ground floor have lain exposed to wind, rain, and sun for these many years, and now an intelligent government, at this *fin de siècle*, actually rears a brick and sandstone building upon them at an enormous outlay. So much for our national motto, "Advance, Australia!"

tion was cited as a good description of the method and published in the *Medical Record* in October, 1893, with a view to drawing the attention of American surgeons to its advantages. While some correspondence has been elicited from the profession, no report of the clinical trials of this anæsthetic has as yet been published in America, to our knowledge. An article, however, by Dr. Prince, appeared in the *St. Louis Medical and Surgical Journal* for 1883, vol. xlv. p. 297, to which our attention was drawn by Dr. Rugh, of Philadelphia, but it excited no attention as proposing a new method of anæsthesia, and no description is given by the author of the clinical experience with ethyl bromide and chloroform mentioned in his tables. Dr. Prince was probably the first to use this method of successive anæsthesia. No result seems to have come from his publication in the way of introducing successive anæsthesia as having superior advantages to other methods. The use of any similar process was entirely unknown to Drs. Hartmann, Bourbon, and the author at the time of their experiments, which were based solely on physiological deductions.

Ethyl bromide has the chemical formula C_2H_5Br, is a colorless fluid of ethereal odor, neutral reaction, and boils at 40° C. The compound should be freshly prepared,[1] perfectly purified, and protected from the air and light, although its decomposition is not so much to be feared as that of chloroform. Any specimen of which the purity is suspected should be redistilled before using, or at least tested for free bromine and phosphorus, a trace of which should condemn the sample. A few drops poured into the hollow of the hand should evaporate without leaving any residue or decoloration. *Special attention must be given that no other organic bromide be furnished in place of ethyl bromide; too many fatal errors have been committed by a substitution of similarly named substances through the criminal ignorance or carelessness of the pharmacist.*

The physiological action of ethyl bromide has been well studied by Dastre, Von Ziemacki, and recently by Malherbe. A review of their experiments gives the following deductions, which are tabulated by Von Ziemacki for comparison with chloroform at the same stage of the anæsthesia.

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[1] The author has been unable to purchase any ethyl bromide in Chicago which comes up to these conditions. Inquiry on two different occasions, at six months' interval, of the principal dealers of the city has elicited the following information. The supply of ethyl bromide is ordered in New York, where in turn it is obtained by importation, which means that any of this product bought of these dealers is already at least *two months old* when they receive it. On one occasion an entire afternoon's search failed to find two ounces of ethyl bromide in Chicago, one of the dealers inquired of calmly replying that they had been out of it for three weeks and had sent to New York, their dealers there being also out of it, several weeks more of waiting would be necessary for the stock to arrive from Europe. This resembles too much a frequent experience in a country drug-store, and is ridiculous in regard to ethyl bromide, which is easily and rapidly made by any chemist, who could thus also guarantee the purity of the article.

CHLOROFORM.	ETHYL BROMIDE.
1. First acts on the intelligence, which becomes troubled; sensation of touch and pain remaining unaltered.	1. First acts on the sensation of pain; analgesia complete; first of all, leaves the intelligence almost intact.
2. Strong excitation of the central nervous system.	2. No wandering of the mind; no excitation of the central nervous system.
3. Following the chloroformic sleep is the relaxation of the muscles.	3. A slight tonic reaction of the muscles.
4. Then commence, successively, the weakening, alteration, and loss of consciousness.	4. *After* analgesia the consciousness is lost.
5. Acts last of all on the sensation of pain.	5. Acts last on the intelligence.
6. Does not stimulate the respiration during narcosis.	6. Stimulates the respiration during narcosis.
7. Never causes any clonic contracture.	7. Sometimes produces clonic contraction during the narcosis.
8. Nausea and vomiting almost invariable after narcosis.	8. Rarely followed by sickness or vomiting.
9. Recovery from depression and return to consciousness are as slow to appear as is the anæsthesia slow to induce.	9. The anæsthesia and its recovery are both rapid when induced by ethyl bromide.

A comparison of these two tables will show how the commencement of anæsthesia with ethyl bromide eliminates the danger of primary syncope (naso-pharyngeal reflex) attributed to chloroform. Also, in stimulating the cardiac action, it should theoretically bring the patient into the best condition to undergo and rally from the depressing influence of the continued administration of chloroform.

Malherbe concludes that the action of the bromide is much less toxic than that of chloroform. The dilatation of the pupil and contraction of the masseters appear rapidly. The respiration, slow for an instant, increases in rapidity and finally becomes irregular if the dose is prolonged and heavy. The muscular contraction disappears with the suspension of anæsthetic inhalation. The reagent determines a strong excitation of the excretory glands. Ethyl bromide seems to act as a stimulant on the nervous system and particularly the vital centres. The respiration is threatened more than the heart.

The physiological action of chloroform needs no repetition here other than to recall that the causes of mortality from its use are limited by physiologists to two,—the first being cardiac syncope, threatening particularly the commencement of the anæsthesia and attributed to naso-pharyngeal reflex. This cause is theoretically eliminated by using ethyl bromide to

abolish all reflex action. The second cause of mortality from chloroform is asphyxia, believed to result from the depression produced by administration of the anæsthetic or from a toxic dose. We have already shown to what degree the ethyl bromide stimulates the system, and it should accordingly counteract the chloroform depression. A toxic dose should be impossible with an anæsthetizer who knows what he is handling.

Preparation for Anæsthesia. The Patient.—The subject for anæsthesia should not be troubled in mind or fearful of the operation,—a condition that is difficult to obtain, yet is often secured by delay in communicating the date of operation until the last moment; and when the time has arrived, by a rapid preparation during which confidence in the surgeon and hope for relief are sufficient to carry the patient through without worry or excitement.

It is well that the stomach be empty, but this point is not so essential as is the case in chloroformization.

The patient, clad with a loose garment, and reposing in bed in the room destined for use after the operation, should be rapidly put under the influence of ethyl bromide. All examination of heart and lungs should have been previously done, and the presence of false teeth, etc., ascertained, in taking the clinical history of the case.

The Anæsthetizer.—The anæsthetizer should have a number of coarse linen towels about one foot square, and folded in fourths, a fifteen-gramme, brown, glass bottle, glass-stoppered, and full of ethyl bromide,—the package as yet unopened; a fifty-gramme bottle of the same glass as the preceding, fitted with a dropping attachment, the bottle graduated in cubic centimetres. This bottle should be filled with chloroform of undoubted purity the moment before commencing the anæsthesia. Within reach of the anæsthetizer, out of view of the patient, should be placed several hæmostatic forceps mounted with sponges for use in wiping the saliva from the mouth and throat of the patient, if needed, with these should be placed a special forceps for forcing the mouth open in case of trismus, and a tongue-forceps for use should the base of the tongue hinder free respiration.

No anæsthesia should be attempted by any one who is not accustomed and well trained to this service. Experience in this work can never be too long.

Every anæsthesia should be carried through, watch at hand, minute by minute, with notation, on a specially devised card, of pulse, respiration, reflex indications, quantity of reagent used, and any unusual phenomena.

All the attention of the anæsthetizer is required for his patient, so that his skill may be ready to seize the first indication for aid. Remember that in cardiac syncope life is extinct in a few seconds, and that only the greatest attention will secure the detection of premonitory symptoms. Above all, the anæsthetizer must not be nervous, but calm, sure of his ability for his task, conscious of his responsibility, and entirely devoted to the charge imposed upon him.

CARD No. 1.

.....*Hospital.* *No.*.....

Date,..... *Anæsthesia by Dr.*.....

Sex,..... *Name,*.....

Age,..... *Occupation,*.....

Diagnosis,.....

.....

Operation,.....

.....

By Dr......

Time of inhalation,.....*quantity,*.....

Method,.....

Time of Operation,.....

.....

Inhalation recommenced.....*times.*

Time.	Pulse.	Respiration.	Pupil.	Axis-ocul.	Reflex Pupil.

Remarks:.....

CARD No. 2.

.....*Hospital.* .....*Ward.*

July 10, 1894. *No.*.....

Sex,..... *Name,*.....

Age,..... *Occupation,*.....

Diagnosis,.....

.....

Operation,.....

.....

By Dr......

From.....*h.*.....*m., to*.....*h.*.....*m.*

Anæsthesia with.....

By Dr......

From.....*h.*.....*m., to*.....*h.*.....*m.*

Quantity of anæsthetic used,.....*c.c.*

.....*grammes.*

Remarks:.....

Appended are samples of cards, such as are furnished at the Hôpital Bichat. These were drawn up by Dr. Bourbon as a result of his experience as anæsthetizer in that hospital, and their convenience will be appreciated by use. Card No. 1 accompanies the anæsthesia. Card No. 2 is a summary of No. 1, made out after the operation, and filed for statistics kept at the hospital. The first card remains the property of the anæsthetizer.

Administration.—Everything being in readiness for the operation,—instruments in order, the surgeon and aids prepared for immediate action (for the patient will be ready in about *one minute* if anæsthesia is performed on the operating-table),—draw out all pillows from under the patient's head. Note pulse and respiration, and the time exactly. Opening the bottle of ethyl bromide, pour a few drops upon the folded towel and pass it over the nose of the patient to accustom to the odor. Immediately, upon the upper side of the towel, pour out about three grammes of the reagent, and, rapidly reversing the towel, apply it closely to the nose and mouth, so that every inhalation may be taken through its meshes. For a moment the patient holds the breath, perhaps making a slight effort to pull away the towel, at the same time swallowing in rapid succession the saliva which is secreted abundantly. In an instant a long inhalation is made, followed by others, especially if so commanded in a decisive voice by the anæsthetizer, the face becomes red, sometimes violently congested, the eyes fixed, the eyelids frequently difficult to raise with the finger, the lines of the face are drawn, the under jaw firmly set, and a general muscular contraction of short duration may be manifested. After three or four long inhalations the patient has lost all sense of pain or touch, but is still conscious. This is the moment for operation, if ethyl bromide alone is used. A few grammes again poured on the towel and inhaled result in complete unconsciousness, if not already obtained with the first dose. *Time*, one-half to one minute and a half; pulse, rapid and strong; respiration, deep, and of about normal rapidity.

At this moment pour out upon another folded towel about ten drops of chloroform, throw aside the ethyl bromide, and immediately apply the chloroform towel in the same way. Watch carefully the pulse and respiration. At this time the operation should commence if the patient be already on the operating-table.

The iris should be carefully watched. At the commencement of the ethyl bromide administration, from normal contraction the iris dilates the pupil by its relaxation. The dilatation is rapid, and at the moment of analgesia reaches the maximum, and alone indicates the instant to change the reagent. The dose of chloroform indicated above is the first and only strong one; the anæsthesia must be maintained by pouring frequently one, two, or three drops of chloroform upon the towel, which is immediately reversed and applied over the nose and mouth, taking care that the patient has no chance of inhalation during the change.

Watch the pulse and respiration; their continuance in good condition leaves the anæsthetizer to be guided entirely by the iris, which, relaxed

when the chloroform is commenced, in most cases contracts, as a result of recommencing reflex caused by the disturbance of the patient, the placing on the operating-table, or the commencement of the operation. A continuance of the chloroform causes complete anæsthesia again, the iris relaxes completely, giving a maximum of dilatation ; a more profound anæsthesia contracts the iris more and more. Arrived at a contraction resembling the normal, the anæsthesia should be maintained at this point. Never allow the pupil to become contracted to the size of a pin-head; the moment is dangerous, for the chloroform is acting close upon the vital point.

A slight dilatation serves as an indication for one or two drops of chloroform in order to restore the contraction. Maintain the patient in this condition. Remember that relaxation of the iris and irregularity of the respiration, with a good pulse, are only indications frequently preceding vomiting. Turn the patient's head to one side and *administer* chloroform. A careful anæsthetizer will seldom be troubled by vomiting during the chloroform anæsthesia. Continue the administration in small doses, regularly given, following the indications of the iris, watching carefully the pulse and respiration, and noting accurately the condition of the subject, the phenomena of the anæsthesia, and the quantity of reagent used, with the exact time of each note.

As the operation nears the finish, diminish the dose of chloroform in frequency and quantity, so that at the completion of the dressing the patient will immediately awaken.

Subsequent vomiting is rare, but the anæsthetizer will never leave the object of his care until complete consciousness is assured.

The accidents of anæsthesia are well known, and no repetition is needed here for the indications and uses of sponges, forceps, etc., nor the conduct to be followed in case of accident.

It is surprising to note the small quantities of reagent necessary for successive anæsthesia. The dose of three grammes of ethyl bromide is generally all that is required, and the repetition of that dose is rarely required. The writer has frequently performed anæsthesia for protracted abdominal operation with from three to seven grammes of ethyl bromide, and chloroform in doses not exceeding a quantity of twelve grammes an hour.

An experience of five hundred anæsthesias, induced by this method, has proved the rarity of vomiting and the rapid reaction on awakening, in marked contrast to the lethargic state of a patient after anæsthesia by chloroform or ether alone. Remembering that from eight to twelve grammes of the first and more of the second agent are usually absorbed for the induction of unconsciousness, it will be seen to what extent the elimination of this amount reduces the toxic effect of anæsthesia.

After the use of ethyl bromide the breath of a patient is often impregnated with a garlic odor. This and the momentary salivation constitute the disagreeable features of the use of this agent. The irritation of the con-

junctivæ noted by some observers seems to us entirely due to the impurity of the agent. Our attention being excited by this action on several occasions led to the examination of samples producing this symptom. The examination in each instance revealed the presence of free bromine or of aceton. Samples, on the contrary, of which the purity was assured, caused no such irritation.

Certain members of the Société de Chirurgie de Paris, at the time of the communication of the method by Professor Terrier, expressed a conviction of its security based on theoretical deductions. Only a long clinical experience will allow the affirmation of this hoped-for security.

Dangers.—Ethyl bromide alone has been accused of fatal results in several instances, one author charging this agent with sixteen deaths. A careful analysis of the reported cases shows conclusively that some of these cases, cited without reference, have, by repetition, increased this total of fatality, rendering it false.

Referring to the original reports of each case, we reduce the fatality to *six* deaths caused by the administration of *bromide of ethylene*,—a fatal error of the pharmacist or others in confounding two entirely different chemical compounds unfortunately resembling each other in name.

Three deaths are found reported where ethyl bromide was given, and we reproduce a summary of each of these cases.[1]

First Death.—The first accident was published by John Roberts (*Philadelphia Medical Times*, 1880, p. 521). A young man, eighteen years of age, entered the hospital for stone in the bladder and rectal prolapsus. His condition of general debility caused the postponement of operation until May 26, the patient having entered April 14, 1880. Before operating, whiskey and one gramme of quinine were administered. The ethyl bromide was given on a towel, a first dose of eight grammes followed by four grammes more, and again four grammes, a total of sixteen grammes. At the moment of incision the respiration was noted as irregular, but there was no cyanosis; the respiration becoming very weak the head of the patient was lowered, nitrite of amyl was given, followed by artificial respiration, the tongue being drawn out of the mouth, and electricity applied to the epigastrium. The result was fatal. The length of time that elapsed during anæsthesia is not given. *Post-mortem:* General congestion of the coats of the brain and spinal cord, with anæmic centres. Caseous and purulent broncho-pneumonia localized in the left lung. Complete adhesion of the entire pleura. Dilatation of the right auricle. Blood-clots in both auricles and ventricles. The left ventricle hypertrophied to a marked degree. Microscopical examination showed a catarrhal pneumonia without trace of tuberculosis; an atrophic degeneration of the fibres of the heart-muscle; interstitial nephritis.

The general debility of the patient, and the pathological condition of

[1] Another case has been reported since writing the above, and is now being investigated by the writer.

lungs, heart, and kidneys are sufficient to explain death in this case, without accusing the anæsthetic employed of any particular fatal action. The most that could be said would be that it was a determining cause.

Second Death.—The second death comes from Marion Sims (*New York Medical Record*, 1880, p. 361). A woman, twenty-five years old, of general good health, suffering from epileptic attacks for the last five years, treated with bromides without result. A right retroversion was discovered, a somewhat swollen condition, and painful. Operation, February 9, 1880, performed by Battey. Anæsthesia with ethyl bromide given on a towel. A first dose of four grammes, followed two minutes later with eight grammes, gave a complete anæsthesia, the conjunctivæ retaining their sensibility, the eyes movable, respiration rapid. At the fifth minute complete insensibility was obtained; sixty respirations a minute, diminishing in frequency each time that access of air was allowed. The tenth minute everything was calm, the pulse strong and full, beating at 86 per minute. During the first twenty minutes, *thirty-two* grammes of ethyl bromide had been given. An attack of vomiting at the fortieth minute, soon followed by a second attack. Three attacks of opisthotonos during the operation, with rigid muscles and extremities, the eyes rolling as in cases of epileptic attacks. The operation lasted an hour and a half, and *one hundred and fifty* to *one hundred and sixty grammes* of ethyl bromide had been administered. The return to consciousness was normal, but a violent headache necessitated a hypodermic injection of morphine. Vomiting persisted for two hours. At 7.30 P.M. a liquid intestinal evacuation took place, the matter being impregnated with an odor of ethyl bromide. At 8 P.M., and again at 9.20, intestinal evacuations of the same character. Milk and brandy were given at 9.30 P.M. A catheter was passed at 10.15 P.M., withdrawing sixty-four grammes of urine. Two more movements of the bowels. At 11 P.M., pulse 117, temperature 99° F., respiration 25, severe headache, diarrhœa. Twenty minutes after midnight, morphine hypodermically gave about two hours' sleep, after passing a catheter at 1.15 A.M., which withdrew about sixty grammes of urine. At 5 A.M., pulse very weak; imperceptible at 7 A.M.; intense prostration, ethylic odor, diarrhœa of brown color. Rectal injection of two grammes of tannin and twenty drops of laudanum was instantly rendered. Convulsions at 11 A.M. Death at noon, about twenty-one hours after the operation. *Post-mortem:* No signs of recent peritonitis; intense congestion of the colon and inferior part of the ileum. Kidneys apparently healthy, but a microscopic examination *revealed an acute catarrhal nephritis.*

These symptoms of toxic action of ethyl bromide, with their fatal termination, need no remarks. No such quantity of this reagent could ever have been risked had the physiology and toxicity of the ethyl bromide been known to the anæsthetizer of this case.

Third Death.—Gleich reports a third death from ethyl bromide (*Wiener klinische Wochenschrift*, 1892, p. 167). A man, forty-eight years old, entered

the clinic March 8, suffering from an anthrax in the region of the right deltoid, of two weeks' duration, with symptoms of pain, fever, loss of appetite and sleep. The sore was as large as the palm of the hand, with ulcerating centre; general condition bad, skin of yellowish tint, pulse frequent, temperature normal. Anæsthesia with ethyl bromide, twenty grammes inhaled for fifty seconds. After the operation a slight agitation was noted, such as is frequently met with in alcoholic patients. While the dressing was being applied, the patient being in a sitting posture, a rapid cyanosis took place, with complete arrest of the heart's action and the respiration. Artificial respiration for an hour and a half was unavailing. *Post-mortem:* Garlic odor on opening the thorax. Genital organs in normal condition. Stiffness of the extremities. Pleural adhesion almost complete. Lungs inflated to medium degree, universally congested, but permeable to the air. Their posterior portion contains serous matter enclosing air-bubbles. Any part of the lung when cut gives off a slight, but clearly-defined, odor of ethyl bromide. Bronchial passages contain only foam. The heart, of the size of the fist, is charged with fat, but flaccid and pale. At the superior part of the posterior face of the right ventricle are found small punctiform spots of exuded blood. The heart contains liquid black blood, in small quantity in the left ventricle, but filling the right heart. The mitral valve allows the introduction of two fingers, the other valve normal; internal coat of the aorta is smooth; the two ventricles slightly dilated, but without thickening. The pale myocardium is manifestly fatty. The liver is gorged with blood, as is also the spleen, which measures fifteen centimetres in length, with a width of nine and a half centimetres. The stomach contained a moderate quantity of yellowish-brown matter of a slight garlic odor. Kidneys congested, but of smooth surface. A small quantity of turbid urine in the bladder. A portion of the mucus of the duodenum and first part of the jejunum is of a brownish color, and gives off a slight but distinct odor of ethyl bromide, otherwise the intestine is normal. Microscopic examination revealed a fatty degeneration of the muscular fibres of the heart; degeneration and stenosis of the hepatic cells; the same degeneration of the epithelial cells of the kidneys is noted.

These post-mortem results differ from those noted after death from chloroform, only in that the cerebral congestion is less marked. The reported condition of the heart does not preclude the supposition that any other anæsthetic would have been as likely to cause the same fatal termination.

Discussion.—Of the three deaths above reported only the last can be charged upon the anæsthetic. Roberts's patient was in so critical a condition that the result could have been expected without the intervention of the ethyl bromide as a determinant. Sims's case is one of intoxication and death caused by the administration of fearful doses of the anæsthetic that only ignorance could have allowed. Remember that the maximum dose of fifteen grammes at two intervals of administration is the recommendation

of this paper. Between that and the dose of one hundred and sixty grammes in an hour and a half there is a difference too great to permit comparison.

Gleich's case remains the only fatality of ethyl bromide administered at all as it should be. A minute criticism of this case is unnecessary. It should be remembered in this connection that thousands of cases are reported all through Germany and France where the ethyl bromide has been used, and this one fatal case becomes of so diminutive proportions that no uneasiness is caused in recommending anæsthesia with ethyl bromide as harmless.

Accidents of Successive Anæsthesia.—Hartmann and Bourbon report two hundred and seventy-one cases of successive anæsthesia. Segond gives four hundred and forty-three additional cases performed by himself or Dr. Malherbe without an accident. The writer has a personal experience of several hundred anæsthesiæ performed by this method for Terrier, Hartmann, Broca, Monod, Pinard, Segond, Malherbe, Beach, and Cazin. Our personal knowledge of upward of one thousand cases of this method of anæsthesia comprises one accident only and that one fatal.

A Russian, eighteen years old, unmarried, employed as a shop-girl, was operated on at the Hôpital Bichat for a prolapsus of the rectum of long duration. Anæsthesia by Dr. Bourbon, using the successive method of ethyl bromide and chloroform. Fixation of the rectum to the ligaments of the sacrum, performed by Dr. Hartmann, aided by the writer, who had charge of the case afterwards. The operation was entirely successful, and a few weeks later the girl left the hospital rejoicing in the cure of her infirmity. Some time later she returned for a mucous membrane protrusion which Dr. Hartmann proposed to scarify with the thermo-cautery. The patient entered the hospital for operation on a Thursday, but was in a state of nervous excitement, which caused the postponement of the operation for three days. The patient wept bitterly on the evening of her entrance and continued in the same state all night, expressing great fear of the operation. The writer was at that time detailed for service in the male wards, but at the special request of the patient went to the women's operating theatre to administer the anæsthetic. Drs. Hartmann and Malherbe prepared to operate. The patient being on the operating-table and all preparations completed, a few drops of ethyl bromide were poured upon the towel, which was then placed over the nose and mouth. In an instant several grammes of the same agent were added,—a total of six grammes was administered. The anæsthesia commenced with no untoward symptom. The indications of anæsthesia realized, at the proper moment the chloroform was substituted for ethyl bromide, the anæsthesia proceeding regularly, the pulse and respiration in good state. At the seventh minute of anæsthesia, the pupil slightly contracted without premonition of any kind and the face of the patient became suddenly *white*. The chloroform was immediately thrown aside, the tongue secured in proper position, and the head turned to one side. A

long expiration and the pulse was imperceptible. The head of the subject being brought below the plane of the table, electricity was applied without the loss of an instant, and artificial respiration was resorted to. All of the combined efforts of the anæsthetizer, with Drs. Hartmann and Malherbe, were unavailing. The action of the heart had instantly ceased, and death was the result of the cardiac syncope. The quantity of chloroform used was ascertained and noted as five grammes. (These figures differ from those cited by Hartmann and Bourbon, who in some way have substituted the maximum dose contained in a bottle of ethyl bromide for *the dose actually given.* Their quantity of chloroform was obtained by mistaking the measure of the reagent in cubic centimetres for its weight.) No explanation of this syncope is offered, the patient having already undergone a prolonged anæsthesia by the same method: her clinical examination had revealed no organic deficiency. No post-mortem was permitted. The nervous condition of the patient was in marked contrast to that which preceded the former anæsthesia; to what extent this might be considered a fatal factor is not affirmed. This accident occurred in that hospital service of Paris which pays the greatest attention to the anæsthesia of its patients,—service of Professor Terrier at the Hôpital Bichat. The anæsthetizer was thoroughly accustomed to such work, and in this case perfectly well acquainted with the patient. A reflex excited by operation cannot be incriminated, for not an instrument had been touched.

Reich also reports a case of death where ethyl bromide and chloroform were given; but a perusal of the report leads us strongly to suspect the purity of the reagent used. The patient, to be operated upon for the extirpation of inguinal ganglia, was given fifteen grammes of ethyl bromide for a minute and a half, without inducing unconsciousness; chloroform was then administered. The entire operation lasted fifteen minutes, during which time twenty grammes of chloroform had been given. Recovering consciousness, the patient vomited abundantly and continued to vomit all through the night and the day following; the breath was impregnated with a strong garlic odor. The region of the stomach became painful, with a steady aggravation of the other symptoms until death. The nights of the fourth and fifth days after operation were passed in delirium with complete absence of fever, the conjunctivæ became yellow, an extreme pallor was manifest, and the liver and stomach were extremely sensitive. This was followed by a lethargic condition, and death on the seventh day following the operation, the body showing patches of effused blood in the skin and an extensive jaundiced condition. *Post-mortem:* Acute atrophy of the liver; necrosis of the renal epithelium; suffused blood in the pericardium. Respiratory organs intensely congested; on compression they gave off a strong odor of garlic. A chemical examination of the organs revealed no trace of phosphorus. No chemical examination of the ethyl bromide was made, but the color of the liquid is noted as *yellowish.*

This fatal case raises too much doubt to allow its consideration as a

result of successive anæsthesia employed as it should be. In the first place the purity of the agent is more than doubtful; also the quantities employed were excessive. Moreover, the anæsthesia was not obtained with ethyl bromide; this alone indicates irregularity in the reagent, mode of administration, or idiosyncrasy of the patient.

The cardiac syncope of the first case resembles in every particular the same accident in chloroformization, and does not appear to incriminate the successive anæsthesia. It may be said that in this case the theoretical stimulus of ethyl bromide failed to secure the heart against the toxic action of the chloroform. No clinical deduction, however, can be made from one case.

The practical advantages of successive anæsthesia,—the rapidity, the elimination of the disagreeable phases of chloroform or ether which precede or retard recovery from anæsthesia with these reagents, the diminished quantity of the toxic agent required,—all these elements of superiority combine to invite the notice and experimentation of surgeons. Its advantages have, on two occasions, been discussed recently at the Société de Chirurgie of Paris,—on the 2d and 9th of May, 1894,—where Dr. Segond relates its introduction into his wards by Dr. Malherbe, coming directly from Professor Terrier's service. With Segond the method was immediately preferred to all others, and at the meeting of the society his official statistics of one year's use of successive anæsthesia are given,—four hundred and forty-three cases without an accident of any kind. Dr. Bazy related his first acquaintance with the method in the wards of Dr. Brun, and its immediate adoption by him. Dr. Monod spoke in much the same way. Dr. Richelot was already on record as endorsing the method to the extent of preferring it in all cases of heart or pulmonary troubles which might be contra-indications of chloroform or ether. The discussion closed with the remarks of Professor Terrier, who insisted on the necessity of *pure* reagents.

The literature of ethyl bromide used with chloroform is accumulating. The following bibliography may be of interest. A complete list was published by *Hartmann* and *Bourbon* in the *Revue de Chirurgie*, 1893.

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LUPUS VULGARIS.

BY WILLIAM S. GOTTHEIL, M.D.,

Dermatologist to the Lebanon Hospital, and to the Northwestern and the German West-Side Dispensaries, New York City.

ALMOST every tissue of the body may be the nidus and breeding-place of the tubercle bacillus. The general integument is not exempt, though by no means so frequently affected as are some of the internal organs; and dermal tuberculosis is not an uncommon disease.

The insight that modern bacteriology has given us into the etiology of disease has enabled us to recognize several well-known and clinically-distinct diseases of the skin as closely related changes, due to one and the same cause. However much they may differ in their clinico-anatomical features, the microscope reveals their essential identity. I refer to the skin affections caused by the growth in that organ of the bacillus tuberculosis, of which not less than four may be enumerated. Most of them enjoy that wealth of synonymous nomenclature which is characteristic of dermatology. They are,—

1. Tuberculosis cutis, comprising tuberculosis cutis ulcerosa and tuberculosis cutis verrucosa.

2. Scrofuloderma, or lichen scrofulosum, or lichen scrofulosorum, or lichen lividus.

3. Verruca necrogenica, or tuberculosis verrucosa cutis, or leichentuberkel, or tubercule anatomique, or post-mortem tubercle.

4. Lupus vulgaris, or lupus Willani, or lupus exedens, or lupus vorax, herpes esthiomènes, frèssende flechte, dartre rongéante.

Lupus vulgaris is the best known and the commonest form in which the tubercle bacillus manifests its action in the skin. The accompanying illustration is a picture of a good example of that disease in its maculo-papular and non-ulcerative form.

We may call the disease lupus simply, since the so-called lupus erythematosus is not related to lupus at all, and is not tubercular. Its essential lesion is a granuloma, a tumor composed of indeterminate round cells, whose accumulation is directly due to the irritation of the cellular elements of the skin by the tubercle bacillus. The mass of new cells is situated in the skin or the subcutaneous connective tissue. It contains a few giant cells, and it differs in no way, save in the microbe itself, from the granulomatous tumors caused by other and similar organic irritants, such as the organisms of lepra or lues. The new tumor-cells may be derived from the connective-tissue cells of the part, or they may be wanderers from a distance, —this point being unsettled in this as in the other cases, in spite of the research that has been devoted to it. Increased vascularity and the forma-

tion of new connective tissue around the tumors are further consequences of the irritation. After existing and growing for a certain time, the nutritive supply falls behind the needs of the colony of new cells. Necrobiosis, and fatty and cheesy degeneration set in; and absorption, inflammation, secondary infections, and epithelial changes explain the varied forms assumed by the disease.

These tubercular granulomata appear in the skin as pin-head or slightly larger nodules, which not only do not project, but are apparently situated below the level of the general surface. They are brownish or yellowish-brown in color, and are covered with a smooth, glistening skin. Their consistence is less than that of the normal dermal tissue, so that they can be readily broken up when a needle or a fine probe is introduced into their mass. Dioscopy renders them more prominent, and brings to light numbers of minute and otherwise invisible nodules. It consists of examining the skin through a piece of plane glass, such as a glass pleximeter, or a microscopic slide, which is pressed flatly on the surface to be inspected. The lupus nodules show up very plainly as brownish-yellow points.

The clinical picture will vary with the location and the extent of the disease; with the degree to which the epithelium, the corium, the subcutaneous tissue, and the deeper structures are involved; with the amount of ulceration and cicatrization that has occurred; and with the subsequent infections that have taken place. The primary efflorescences may long remain discrete and stationary, giving us the form known as *lupus maculosus*. This is well shown in the illustration. She has had the disease since her fourteenth year, and she is now twenty-six years old, yet very few of the lupus nodules have coalesced; and even where they, with the new connective tissue around them, have united into larger masses, breaking down, secondary infection, ulceration, and absorption have occurred only to a very limited extent. There is hardly any cicatricial tissue to be found in her face.

Nevertheless, in the course of time, the old papules increase in size, and new ones appear. Gradually they fuse together into large, flat, brownish-red infiltrates, filled with lupus nodules, whilst similar structures are scattered around in the healthy skin outside. If, then, the nodes go on to degeneration and spontaneous absorption, with a fine lamellar surface desquamation, there are ultimately formed soft superficial white scars. And even in this cicatricial tissue new foci of bacillary growth appear from time to time, and go through the process of involution again; this being a characteristic point, and one which distinguishes the granuloma of lupus from that of other diseases. We then have what is known as *lupus exfoliativa*.

In other cases, again, secondary infection with pyogenic micro-organisms may occur, resulting in the formation of scallop-edged sores, with flat margins, and weak, easily-bleeding bases, *lupus exedens* or *exulcerans*. If these granulations become hypertrophic, as they frequently do, and project as fungoid masses above the surface of the ulcerations, we have *lupus hypertrophica*, or *tumida*, or *frambœsioides*. Sometimes the ulceration shows a



Appearance of patient affected with lupus vulgaris.

marked tendency to spread peripherally, advancing at one margin and healing with cicatricial formation at the opposite one, new lupus nodules in more or less crescentic shapes appearing at the advancing edge, and the separate infiltrations fusing with each other and with the sore; we then have the *lupus serpiginosus.*

Often, however, the disease does not confine its ravages to the skin. The subcutaneous tissue, the fasciæ, the muscles, and the cartilages may be invaded and destroyed. The bones usually, though not always, escape. Whilst the lupoid scars are not specially contractile, they show a peculiar tendency to close up the natural orifices of the skin when the disease involves their margins. In a case that I had an opportunity of observing for several years the nasal cartilages were entirely gone, the nasal bones remaining intact; but the nasal orifices were entirely obliterated, and the mouth, necessarily kept open for breathing and nutrition, was surrounded by a permanent zone of ulcerations that extended well on to the mucosa. The ulcerations were the expression of the permanent conflict between the tendency of the cicatrix-lined orifice to contract, and the necessity of the patient's keeping it open.

The seat of the lupoid disease varies. Most commonly, as in our case, it is limited to the face. It is especially prone to commence on the tip of the nose, or on one or both alæ; thence it spreads to the cheek, temples, and forehead; the eyelids may be invaded; and a secondary conjunctivitis, ectropion, trachoma, and irido-cyclitis may be set up. The nasal and buccal mucosæ are sometimes affected, but rarely primarily. Cases of primary lupus of the larynx, the conjunctiva, and the mucous membrane of the nose and mouth have, however, been reported. The characteristic nodules are hardly visible in the red membrane; and all the cases appeared as superficial ulcerations covered with an abundant papillary vegetation.

The head is usually only affected by extension from the face. On the neck the malady generally assumes the serpiginous form. On the trunk it is rare, and usually appears as the warty form known as *lupus verrucosus.* In very rare cases it is spread over the entire body as *lupus disseminatus.*

Other symptoms than the local ones are rarely, if ever, present. Patients with lupus do not have tuberculosis of the lungs or other internal organs. The subject of the disease in the case above mentioned, with lupoid ulcerations on the lips and around the mouth, must have been continually swallowing the detritus of the lupus nodules; yet her general health was perfect.

The only complication that has been noticed, and that but rarely, is the occurrence of carcinoma in the lupoid scar.

The diagnosis of lupus is important, and is based on the following points:

1. The disease always begins in youth, before puberty.

2. Its course is extremely chronic; it takes years for any considerable extent of skin surface to be involved.

3. The reddish-brown, sunken, and soft nodules are characteristic, and are to be especially sought for at the periphery of the diseased patch.

4. The ulcers are crescentic in shape, with soft margins, and with a base usually covered with abundant granulations.

5. Its seat is usually on the nose and the face.

6. It destroys the cartilages, but not the bones.

7. New papules appear from time to time in the scar tissue that marks the previous location of the disease.

Of these, the third point is the most important; it is, indeed, on the efflorescence itself that the diagnosis must ultimately be made.

The differential diagnosis is with—

(*a*) Eczema: has secretion and inflammatory œdema, runs a rapid course, and never shows either ulceration or scar-tissue.

(*b*) Psoriasis: shows shiny scales on a bright-red, punctiform, bleeding base; scars are absent, and the flexor surfaces are chiefly affected.

(*c*) Syphilis: has a rapid course, shows hard papules and ulcers with painful, indurated, and infiltrated edges; has bone-destruction and pigmented scars, occurs after puberty, and shows other syphilitic symptoms.

(*d*) Lupus erythematosus: shows bright-red, non-elevated borders, central non-ulcerative absorption of the skin, and a covering of seborrhœal scales, from whose lower surfaces project the characteristic sebaceous plugs.

(*e*) Carcinoma: is of ivory hardness, with ulcers having elevated margins and but little secretion, with pain, and lymphatic gland-enlargement, and occurs in advanced life.

(*f*) Rosacea: shows vascular dilatation, comedones, pustules, seborrhœa, and no scars.

(*g*) Tuberculosis cutis: shows ulcers with yellow indolent granulations, often studded with miliary tubercles, with much secretion, and frequently tuberculosis of the internal organs.

(*h*) Scrofuloderma: has weak yellow granulations, and overhanging edges to its ulcer.

The prognosis, as to life, is good. Lupus does not interfere with the general health. Distressing deformities are, however, a frequent result of its presence; and we cannot prevent the recurrence of lupus nodules in the operative scar.

The treatment of lupus offers an unfortunately wide field for the selection of remedies. General treatment is of some use as an adjuvant to local measures. Tonics, change of air, sea-bathing, do undoubted good. The good results obtained from the creosote treatment in tuberculosis of the lungs has led to its employment in lupus. It may be tried, but it probably does as much good by its local action on the gastro-intestinal tract, and its unpleasant taste and odor, as in any other way.

Only a few months ago it was supposed that in the hypodermic injection of tuberculin we had at last obtained a specific for the lupoid diseases. We will draw a charitable veil of oblivion over that melancholy chapter of

therapeutic credulity. Suffice it to say that there is the gravest doubt as to the real lupoid nature of many of the reported cases of cure, some of them being undoubted cases of erythematous lupus and other diseases; and that there is not on record a single undoubted case in which anything like a permanent cure has been effected. Thiosinamin has lately been highly recommended by Hebra and others; 0.03 to 0.045 of a fifteen-per-cent. alcoholic solution is to be injected once daily, between the shoulder-blades. The reaction is purely local; healing is promoted, and the scars are soft and flexible.

Our main reliance, however, is in local treatment; and that, so far as it goes, is satisfactory. A number of means are at our disposal to destroy the nodule in which the tubercle bacillus is growing. The following have been the most satisfactory in my hands:

The *curette*. 1. Induce local anæsthesia by the application to the part of a ten-per-cent. solution of cocaine, or the subcutaneous injection of a few drops of a one-per-cent. solution of the same drug, or by the ether spray, or by the use of the ethylene chloride. It is usually not necessary to do this in the case of males. 2. With the sharp curette quickly and thoroughly dig out a number of the soft nodules. The process is much less painful than would be thought. The soft granulomatous tissue resists the instrument so little that there is no difficulty in removing the entire mass, and no danger of injuring the healthy tissue. 3. In ordinary cases apply a ten-per-cent. solution of corrosive sublimate in alcohol. In the hypertrophic and ulcerated forms of lupus, put on a piece of salicylic-creosote plaster mull.

The *galvano-cautery* has given me good results, especially when the nodules are small. A fine point must be used, and care must be taken that the entire nodule, and not merely its centre, is destroyed. The local reaction is, of course, severer than with the curette; and only a few nodules, and those not too close together, are to be destroyed at one sitting. A finely-pointed glass rod dipped in pure carbolic acid, introduced through the soft skin into the centre of each nodule, and then thoroughly moved around to break up, cauterize, and destroy the nodule, is useful. A pointed stick of nitrate of silver may be employed in the same way.

On the other hand, I have seen no good results from the injection of cinnamic acid, a drop or two into each nodule, as recommended by Landerer. Nor can I recommend the external application of iodized glycerin, pyrogallic acid, acetic acid, etc.

In all cases we should recollect that the nodules tend to disappear spontaneously by interstitial absorption or ulceration, and that they leave behind scars that are superficial and only slightly contractile. We must be careful not to produce a deformity that would be worse than that which nature unaided would cause. Total excision and violent and extensive cauterization are necessary only in very exceptional cases.

EXTRA-UTERINE PREGNANCY.[1]

BY RICHARD DOUGLAS, M.D.,

Professor of Gynæcology in the Medical Department of the University of Nashville and Vanderbilt University, Nashville, Tenn.

At our annual convocation it is anticipated that each member of the organization will contribute either by discussion or by essay to our proceedings. Yet I regret to say the Secretary had to labor with much energy to procure a full programme. Our Fellows are slow to present their work simply because they have not met with a "unique case," or a new coccus, or an interesting case in practice. The daily work of the busy practitioner leads him in certain channels. He is overladen in mastering the many phases of the common ailments; he has but small time and less need for exceptional cases and conditions. I, therefore, invite your attention to a condition so frequent and of such vital importance that it must appeal with interest to every practitioner in this hall. Ectopic gestation is a subject that has claimed my attention for years. It is my desire to briefly present the practical results of my labor.

Case I.—Anna, negress, aged twenty-three, was seen in consultation with Drs. Baskette and Wilson, and the following history elicited: Mother of three children, the youngest eight months old; her general health fair, considering her surroundings. Scanty menstruation had appeared twice at proper intervals after the birth of last child. In hastily getting out of bed one morning she felt a sharp, cutting pain in left side, grew dizzy, became nauseated, and sank upon the floor in a faint. Her husband assisted her to bed. She soon reacted, but still suffered excruciatingly with what she now described as "cramping pains." These finally passed away, only leaving her a little tender over the abdomen. Three weeks after the first attack she was again seized with abdominal pains and great prostration. Recovering somewhat from this seizure, she now developed inflammatory symptoms with a continuous uterine hemorrhage. It was at this juncture that I was called. I found the abdomen distended by a tense elastic tumor occupying almost a central position and reaching to within an inch of the umbilicus. There was extreme tenderness and tympany. Vaginal examination revealed an enlarged uterus, retroflexed, and fixed by a mass that appeared to fill the entire pelvis and greatly encroached upon the vagina. The mass was irregularly hard and soft—at points almost fluctuant. The impulse of the uterine arteries could easily be felt. The analysis of the symptoms coupled with the physical signs, while not furnishing a complete chain of evidence, would admit of but one diagnosis upon which we all agreed,—that of ectopic gestation with probable rupture into the broad ligaments. Early operation was advised and determined upon. The patient was removed to the College Hospital and the operation was performed in the presence of the class the following day. The tumor was found closely adherent to the anterior parietes. Opening the sac a quart or more of clotted blood and a solid

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[1] Read before the Tennessee State Medical Society, April, 1894.

organized mass, which I took to be the fruit-sac, were removed. I now saw that my operation, on account of adhesions, had been practically extraperitoneal, and that the cyst-walls were in reality nothing but expanded broad ligament. Convinced that the pathology was an ectopic gestation with a rupture downward into the broad ligament, I determined to clean out the cavity of the hæmatoma and pack with iodoform gauze. This being done, the patient was put to bed in fair condition. On the seventh day there was a secondary hemorrhage which might have been serious but for the timely intervention of Dr. Baskette. He easily controlled the bleeding by firmly packing with gauze. The patient progressed after this to an uninterrupted recovery. Last week she presented herself to me—unusually healthy looking—just three months after the operation.

CASE II.—Mrs. H., aged thirty-four, mother of four children, the youngest five years of age. Since the birth of her last child she has suffered from some pelvic symptoms, and has at various times been under the care of specialists. Their diagnosis (as expressed to her) was "catarrh of the womb." Her menstruation for the last year has been less painful and more regular than ever before. On December 24 last she was seized with a sudden and violent pain in the lower portion of the abdomen. Her extremities became cold, she was bathed in profuse perspiration; did not faint or lose consciousness. About the first of January she had a uterine hemorrhage, which continued until she came under my care, February 25. She was profoundly anæmic, greatly emaciated, unable to move her body without excruciating pain, and was taking about three grains of morphine daily. Her temperature was 101° F., pulse 130; the abdomen was exquisitely tender and slightly distended. The cervix was enlarged, and in each vaginal vault I could detect a smooth, fluctuant tumor. For some reason I was not impressed with the importance of the shock which occurred December 24. Disregarding this and other suggestive symptoms, I diagnosed double pyosalpinx, and advised operation, which was done on February 26. On opening the abdomen a large tumor, the size of a fœtal head, lay upon the right side of the pelvis. After some difficulty, I succeeded in removing the omental attachments and exposing the coverings proper of the tumor. From its dark color and elastic feel, it was manifest that I had to deal with encysted blood. Opening the mass by free incision on the top, two pints of blood-clot were removed. I was now able to take my anatomical bearings. The Fallopian tube was found agglutinated to the ovary and with a rupture on its under surface. I could easily note the site of rupture. The hemorrhage had taken place between the folds of the broad ligament, widely separating them. The blood had even dissected its way under the peritoneum, lifting it from the uterus, so that there was quite a large clot which lay subperitoneally between the uterus and the bladder. The tube and ovary were removed, the cavity of the broad ligament cleansed and packed with gauze. Directing my attention to the left side, I found a small ovarian cyst, which was responsible for her suffering for the last four or five years. This was removed, a careful toilet of the peritoneum was made, and a glass drain introduced. Patient did not do well after the operation. There was evidently some inflammatory action about the pedicle on the right side which gave high temperature for a few days. Later a mural abscess formed. This protracted her recovery, but I am glad to say that she was discharged practically well in six weeks from date of her admission.

CASE III.—Mrs. I. L., aged twenty-two, gave birth to a child four years ago; sterile since that time. About a year ago she had a rather profuse menstruation followed by slight symptoms of pelvic inflammation, since which time she has suffered with leucorrhœa and painful micturition; she was perfectly well otherwise, and normal in all her functions, prior to last October, when the menstrual flow did not appear at the anticipated time. She had a slight show, however, in November and December; felt nothing unusual during these months, and did not believe herself pregnant. On January 1, she was seized with severe pain in the side, had a chill,

and for several days was much prostrated. The pain was sharp, cutting, and paroxysmal in character, and at times most acute about the umbilicus. A sympathetic pain was often felt in the left breast. These symptoms were followed by slight fever for several days, which subsided, and she recovered sufficiently to sit up. On January 10, she had a free flow, which she regarded as her normal menstruation. It was about this time that she observed a swelling in the right side of the abdomen. The gradual increase in the swelling and the slight pelvic pain were the only annoying symptoms until about February 6, when there was again a free discharge of blood. She now had an exacerbation of her pelvic symptoms, considerable pain, tenderness,



Dr. Richard Douglas's case of extra-uterine pregnancy. (Natural size.)

and pyrexia. She was presented to my clinic on February 25, with the diagnosis of uterine fibroid. I carefully investigated the case and elicited the history as above detailed. Local examination showed a slightly distended abdomen. A hard globular swelling, the size of a man's fist, could be outlined in the right ovarian region. There was a flat, diffused hardness all across the lower portion of the abdomen. Vaginal examination revealed a large, soft cervix high up and anterior. The entire pelvis upon the left side was filled by an irregular nodular mass; at one point, upon the extreme left, I could elicit fluctuation. The uterus was about four inches in depth. After considerable study of the case, and a most careful investigation into the personal history, I came to the conclusion that we had to deal with a ruptured ectopic gestation. On February 28, that diagnosis being proclaimed, I operated before the class.

Upon opening the abdomen the globular tumor felt on the right side was found to be the fundus of the enlarged uterus, which was displaced from its position and elevated out of the pelvis by a purplish black tumor, the size of a cocoanut, which completely filled the true pelvis and extended up into the abdomen. The intestine and omentum were closely adherent to the tumor. In attempting to free these, I unfortunately opened the mass. Had this not been done, it might have been possible to have removed the entire sac and its contents. A quantity of blood-clot and a fœtus were removed. I now had to encounter the placenta, which was attached to the tube and broad ligament. It was quite large, as may be seen from the illustration, which is of natural size. I feared hemorrhage from the separation, but finding that I could peel it off, though with difficulty, I removed it *en masse*, then ligated and removed the tube and ovary. The rent in the broad ligament was partly closed by suture, the cavity flushed with hot water, and a drainage-tube introduced. For fear of hemorrhage at the site of the placental attachment in the cavity of the broad ligament, I packed with gauze. The patient rapidly recovered.

The specimen is a perfect one. I would particularly call attention to the thick placenta, upon which I may have something more to say. I believe this operation was most timely, for from the appearance the posterior covering was about to give way, and a secondary rupture into the peritoneal cavity would have been speedily fatal.

I would be pleased to supplement these cases with six others, five of which were operated upon, with one death, the unfortunate case being one of extraperitoneal rupture of some three weeks' standing. The operation was undertaken under the most adverse circumstances, the patient dying the third day from exhaustion. The sixth case in the series was a post-mortem. The patient was taken suddenly while shopping and brought to my office, where she died in a few minutes. The diagnosis was made by Drs. Cain, Wilson, and myself.

Observers generally declare that extra-uterine pregnancy occurs with equal frequency in either tube. From so small a group of cases as I submit, one should not draw conclusions, yet in seven out of nine cases the left tube was the seat of the vicarious growth.

Reflections.—Salpingitis, with its attendant complications and distortions, is unquestionably the most active causal factor. In eight out of nine cases there was a history of antecedent pelvic inflammation. I might go still further, and say that in four of them I have every right to believe that it was due to gonorrhœa. Pain was a conspicuous symptom in all my cases, whether due to tension upon the tube-wall (Price) or to the apoplectic ovum, and its gradual separation as hemorrhage accumulates before rupture, or to tension upon the broad ligament as this is distended by the accumulating fluid after rupture, the extension of clots, uterine and tubal contraction, or mild peritonitis. Pain is a constant symptom present before, at the time of, and after the rupture, and may be variously described as cramping, colicky, sharp, cutting, tearing, burning, or expulsive.

So much has been said by worthy observers about shock that I only mention it to emphasize its importance, and to urge you to give it due consideration when met with in woman, regardless of the other points in the

history. Had I given due regard to the element of shock, the second case reported would not have been diagnosed as pyosalpinx.

Berry Hart tells us that the most common site of rupture is through some part of the tube covered by peritoneum. If one will take the trouble to go through the cases that abound in literature, they will show that primary intraperitoneal ruptures are comparatively infrequent as compared with intraligamentous ruptures. However, I have seen three intraperitoneal ruptures and six of the downward variety. In a recent discussion, Drs. Coe and Hanks, of New York, expressed their belief in these secondary ruptures through the broad ligament into the peritoneal cavity. Observers have been at fault, or else these excellent gentlemen entertain views peculiar to themselves. I am convinced that the second case reported, from which this beautiful specimen was removed, was on the eve of secondary rupture. In one of my early cases I found a rent in the tube and broad ligament. There had been an interval of nearly four weeks since the first shock, and it is probable that the broad-ligament tear was secondary to the tubal rupture. However, as the rent was continuous from the tube into the broad ligament, I considered it a primary intraperitoneal rupture.

It is a matter of the greatest importance to the attending physician to determine as well as he can the site of rupture,—that is, whether it is intra- or extraperitoneal. In these cases, when the differential diagnosis can be made, our line of conduct is clear. The symptoms and physical signs which enable us to make the differential diagnosis at the time of rupture are in a measure reliable. Intraperitoneal rupture produces more profound shock, from which the patient may not recover, or if reaction does occur it is incomplete, and the patient's pulse remains fast and thready. The heart's action is influenced by the slightest exertion. In a few days, if the patient lives so long after rupture, the skin and conjunctiva become dyed from the rapid absorption of hæmoglobin. The great thirst, the nausea, the hurried thoracic respiration, are all symptoms indicative of the graver character of lesion. The physical signs are a rigidity of the abdominal muscles after the patient recovers from shock, the absence of any definite tumor, and exquisite tenderness all over the abdomen. The vaginal examination throws but little light on the case. A general fulness in the vaginal vaults—there is no distinct tumor or mass—and, perhaps, a little lateral or forward displacement of the soft and enlarged uterus, are the only physical evidences of the intraperitoneal rupture.

In subperitoneal ruptures, when the hemorrhage accumulates between the folds of the broad ligament, I do not think the pain is acute, nor the shock so profound and persistent. The patient may recover in an hour after the accident. The constitutional symptoms of internal hemorrhage are not so marked: the acute anæmia is not present. If examined at the time, or soon after, there is a distinct or circumscribed tumor. The mass lies down low in the pelvis, and may force the uterus from its cavity, as in Case III. It lies on one side of the uterus, generally behind that

organ, and bulges into the vagina. It is irregularly nodular and soft; part of the fœtus may be felt and recognized through the vagina. The subsequent behavior of an intraperitoneal rupture is altogether different from that of an intra-abdominal rupture.

Our treatment in any given case of tubal gestation at the time of the rupture should be based upon the diagnosis of whether it is intra- or extraperitoneal. I am fully aware that many of the most successful operators, Bantock leading the list, oppose operating in time of shock. The conditions are, in intraperitoneal rupture, in every way favorable for continuous bleeding, and in two of my patients, while they did not actually bleed to death at the time of rupture, the arrest of hemorrhage was merely accidental, and I can see no reason why the generally accepted principle in surgery should not obtain under these conditions.

Convinced, then, as to the intraperitoneal variety of the rupture, we should, without delay, open the abdomen, grasp the proximal side of the tube; this arrests hemorrhage; now transfuse your patient with saline solutions, bring up blood-pressure, and complete the operation by removal of the tube as expeditiously as possible. To hurry along simply to effect removal of the tube and blood-clot from the abdomen at the risk of the sacrifice of your patient after you have accomplished the prime object you have undertaken—namely, control of the hemorrhage—is not judicious surgery. What does it matter if the patient is upon the table half an hour, or even an hour, if during that time you are supplying the collapsed blood-vessels with a fresh volume of saline solution, the field of operation is protected by hot pads, and the reliable stimulants—strychnine and digitalis—are employed? The equipment necessary to carry out this procedure can be obtained in the few minutes granted us. On the other hand, if from the symptoms and local signs your rupture is extraperitoneal, your hemorrhage is circumscribed within the folds of the broad ligament, prudence recommends waiting for thorough reaction,—even more: take twenty-four or thirty-six hours and prepare your patient in the usual way for section. It simplifies the case greatly and enhances the chances for recovery.

I am not familiar with the vaginal evacuation of the broad ligament accumulations, and if I am to be governed by my own experience, I shall continue to remain in ignorance. The changes that take place in the tube under the influence of ectopic gestation leave it as a dangerous and useless appendage, and its removal is required.

A CASE OF PROGRESSIVE ENLARGEMENT OF THE HANDS.

BY C. F. HERSMAN, A.M., M.D.,

St. Louis.

THE subject of these notes consulted Dr. Hardaway, and was by him referred to me. As the patient resides at a distance, it is not possible to see him often; and while in some respects my notes are not so full as I could wish, it is at present impossible to repair the deficiency.

The patient is a clergyman, fifty years of age, rather spare in build, five feet four inches in height, and weighs one hundred and thirty pounds. There is nothing of interest in his family history. Since youth he has suffered from a painful affection of the joints, which comes in acute paroxysms, beginning in one joint and rapidly extending to others. The affected joints become red, swollen, and tender; in fact, he seems to have suffered from acute articular rheumatism. Years ago he suffered for a time with insomnia. With these exceptions his health has been good.

The present trouble first showed itself three years ago as an enlargement of the first phalangeal joint of the third finger of the right hand. At the time he was not suffering from an attack of rheumatism, nor was he taking any drug. Soon after the enlargement of the joint was noticed, the patient observed a little hard "lump" on the extensor side of the joint. In a short time the entire finger became noticeably enlarged, and "lumps" appeared on other fingers of the right hand. The whole hand now grew slowly larger, and the skin over the back of the hand and fingers took on a dusky-red color. This color was not always of the same intensity, being sometimes more pronounced than at others. He has never had fever, so far as he can judge, during the whole course of the malady, nor have I been able to detect any rise in the general temperature since he has been under my observation. The patient has never had any venereal disorder nor any disease of the skin other than the present trouble. His urinary functions have always been performed in a natural manner, and he has never remarked any abnormal appearance of the urine.

My notes were made mostly when the patient was first seen in the spring of 1893. That which at once arrested the attention was the increased size of the right hand. The whole hand seemed increased in width, giving the extremity a stumpy appearance, but the great thickness of the fingers was peculiarly striking. The fingers were not bulbous or more enlarged at the extremity than elsewhere, but retained their tapering shape. The skin over the dorsum of the right hand was of a peculiar vinous-red color, which on pressure only partly disappeared. The skin in this region was elevated into several hummocks and was smooth, though not tightly stretched nor shining. The discoloration extended from the hand to the backs of the fingers, but was less marked there than on the hand. The color of the skin, according to the statement of the patient, got a bluish tinge on exposure to cold. The skin in the discolored area was warmer to the touch than where the skin was normal. About the first interphalangeal joints of the first, second, third, and fourth fingers can be seen small, white, pea-sized elevations of the skin. Two or three of these exist on each joint, and they are not situated exactly over the



FIG. 1.—Progressive enlargement of the hands, posterior view.



FIG. 2.—Same case, anterior view.

joint, but to the distal side of it. The skin on the palmar aspect of the hand is strikingly loose, and all the natural creases and folds are exaggerated, in spite of the increased breadth of the member. The skin in this region has more of a pinkish hue than one would expect to see on the palm.

On the back of the hand, lying under the purple-colored area, is a firm, flat, trefoil-shaped mass. This seems to lie in the subcutaneous tissue, and though the skin is attached to it, and cannot be freely moved over it, it does not seem to be thickened. Extending from this mass along the dorsum of the ring and middle fingers to near the first interphalangeal joint are two subcutaneous prolongations of irregular contour, giving to the finger the sensation of a string of beads felt through the skin. When the fingers are opened and shut, the whole mass on the back of the hand as well as the prolongations move as though connected with the tendons. The little pea-sized masses near the joints mentioned above are of cartilaginous hardness, and are firmly embedded in the skin, seeming also to be attached to the deeper tissues, as they can only slightly be moved over them. One of these little bodies was punctured and found to be solid throughout. The projection of the skin over the palmar aspects of the phalanges, due to the cushions of subcutaneous tissue found in these regions normally, was much increased, and this was especially marked over the bases of the fingers. In these regions the subcutaneous tissue seemed firmer and denser than normal, and in the little finger formed a firm subcutaneous plate. At the bases of the little and ring fingers are two pea-sized subcutaneous nodules, which seem to be attached to the flexor tendons. The subcutaneous tissue of the thumb is also thickened, though there are no nodules to be found. While the increased size of the fingers seems to be caused principally by the new formation in the subcutaneous tissue, yet there is evidently some enlargement of the ends of the phalangeal bones. The head of the right ulna is enlarged, and over it is a subcutaneous plate as large as a half-dollar, firm to the touch and movable under the skin, which is slightly reddened. Extending from this plate up the ulnar side of the arm, for a distance of two inches, is a spur one-fourth of an inch wide, the skin over which is not discolored.

In the left hand the changes are of a similar character, but less marked. The skin on the back of the hand has a slightly bluish-red color, but there is only slight thickening of the subcutaneous tissue. Over the first interphalangeal joint of the third finger is a little nodule like those described on the right hand, and on the palmar aspect are two or three subcutaneous nodules. Over the head of the left ulna is a subcutaneous plaque as large as a silver quarter. The olecranon process of the left side was injured by a fall many years ago, and there is now an enlargement the size of a hen's egg, apparently an exostosis. Seated over this is a flat, somewhat irregular, firm, subcutaneous mass, as large as a dime. The skin is red, but is not attached to the growth. Over the right olecranon is a subcutaneous mass of irregular outline as though made up of several flat lobes, the whole being an inch in diameter. The mass is freely movable over the underlying structures, and the skin over it, though reddened, is not altered in any other way, nor is it adherent.

On passing the finger up and down each tendo Achillis a sensation was conveyed as if from the presence of slight irregularities. A small subcutaneous plate was discovered over one patella (which patella the notes do not state).

No other changes than those mentioned were found. In the hands, touch, pain, and temperature sensation was normal. There is no pain connected with the affection, save that in rainy weather there is slight aching of the right hand. Some of the nodules are tender on firm pressure. The hand can be used very well even for delicate operations, such as writing. The heart is normal. The man is of good intelligence, and his mental faculties are in a normal condition. The urine is normal.

The measurements of the hands, taken at the first visit, are as follows:

	Left Hand.	Right Hand.
Length of middle finger	10 centimetres.	10.5 centimetres.
Length of little finger	7 "	7 "
Circumference of little finger	6.5 "	8 "
Circumference of middle finger	7.5 "	8.5 "
Circumference of ring finger	7 "	8.5 "
Width of hand at knuckles	8.5 "	9.8 "
Circumference of hand at knuckles	22.6 "	24 "
Circumference of wrist	18.2 "	19 "

The patient was placed on increasing doses of iodide of potassium, and given a five per cent. oleate of mercury ointment to rub into the hand twice a day after it had been immersed in hot water. No improvement has resulted from this treatment. On the other hand, since he has been under observation the size of the right hand has slightly increased, as shown by measurements, and several new nodules have developed. In other parts of the body the disease seems to remain stationary, or to advance so slowly that its progress is imperceptible.

A portion of the subcutaneous plate over the right olecranon was excised, and submitted to microscopical examination. The growth was made up of connective tissue, which was arranged in bundles or masses. In these bundles there were a large number of small round cells, while the nuclei of the connective tissue were very abundant. These lobules are bound together by a loose-meshed connective tissue, in which the individual fibres were longer and more fully developed than in the lobules, and there was here no small-cell infiltration. In one or two spots I discovered blood-vessels passing through the new connective tissue, and about these there was a particular abundance of small cells.

I have not been able in the literature at my command to find any case exactly like this one. Acromegaly is readily excluded, as there is no change in the lower jaw or feet, nor are the general symptoms found in that disease present in the case under consideration. When the right hand alone is considered, one might think of a beginning elephantiasis, but when the bilateral arrangement of the disease and its multiplicity of location are taken into consideration, such a supposition becomes impossible. The rather indefinite affection described under the name erythromelalgia is a painful affection, and the peculiar subcutaneous plates noted in my case are not a part of that malady. There is no evidence that the affection belongs to the diseases of the nervous system which are accompanied by trophic disturbances.

In the *British Journal of Dermatology* for January, 1894, Crocker reports a case under the name *erythema elevatum diutinum*. In this article he refers to a case published by Bury, which he regards as presenting the same type of disease as his own case. Bury's is in some respects much like the case I have reported above. The patient, a child, had suffered from acute rheumatism. The eruption attacked the hands and feet, and was present over the knees and elbows. The skin in the affected areas was purplish, and there were nodules on the dorsal aspects of the phalangeal

joints which resembled "gouty tophi." In this case, however, the principal lesions consisted of dense infiltrations in the skin, while in my case, though the skin was adherent over the larger plaques, the infiltration seemed to be in the subcutaneous tissue.

The only etiological factor to be discovered in the present case is the repeated attacks of rheumatism. The virus of rheumatism and the allied affections has a well-known predilection for fibrous structures, and especially those about joints, such as the periosteum, ligaments, and tendons. The fibrous growths called rheumatic nodules are well known in their relation to rheumatism. They are most common in children, but are often seen in adults. Sometimes they are quite large and numerous.[1] It does not seem improbable to me that the same condition might be so extensive as to produce the phenomena seen in my case. The bodies near the joints seemed to be small rheumatic nodules. It is not unreasonable to suppose that the subcutaneous plates were similar in nature. The congestion and discoloration would be explained by the interference with the circulation caused by the new growth. The enlargement of the bones may have been due to periosteal thickening, or to chronic lymph-obstruction with consequent increase in size. I have noted the fact that the skin on the palmar surface was loose and the folds deepened as though it were really increased in size, and this would bear out my supposition that part of the enlargement of the extremity may have been due to lymph-obstruction.

To-day there is a constantly growing belief that rheumatism is caused by a living organism. I therefore stained a number of sections, with special reference to demonstrating micro-organisms, but with negative results.

My belief, then, is that in this case we have to do primarily with an increased growth of the fibrous elements of the subcutaneous tissue, perhaps beginning about the tendons, caused by the special action of the rheumatic poison. The case seems to me to be unique in the location and extent of the lesions rather than in their nature.

CLINICAL VALUE OF RENAL CASTS.

BY A. E. AUSTIN, A.M., M.D.,

Professor of Medical Chemistry at Tuft's College Medical School.

WHATEVER theory we entertain of the formation of these casts,—whether we consider them simply moulds of the renal tubules composed of the exudated serous elements of the blood, hollow cylindroids consisting of the epithelium of the tubule intact, or abnormal secretions of the cells them-

[1] Mackey, Lancet, January 20, 1894.

selves,—we can, nevertheless, separate them into groups from consideration of each of which certain definite and natural inferences may be drawn. In the first group we may place the hyaline and blood-casts, which, if found alone, merely indicate the presence of some irritation and consequent hyperæmia of the kidney, but not of sufficient severity to produce a true tubulitis with consequent desquamation of the epithelium. In connection with this I recall the case of a young lady whose only symptoms were lumbar pains and vesical irritation, but whose urine for a long time contained a trace of albumin, and quite numerous hyaline and blood-casts, with very many crystals of oxalate of calcium. Upon a diet which excluded amylaceous and saccharine food the urine entirely cleared up, and she has since remained in good health. Here also may we place those cases of passive congestion of the kidney which are invariably dependent upon some obstruction to the egress of blood through the renal veins, and are always recovered from if the obstruction can be removed. A good illustration is the following: A woman, seven months pregnant, whose only symptom was marked œdema, passed urine with the following characteristics: amount, five hundred cubic centimetres; specific gravity, 1024; color high, slight trace of albumin; urea, 17.76 grammes in the twenty-four hours; chlorine, 4.08 grammes; sediment contained a few hyaline casts. This condition remained until her confinement, causing a great deal of anxiety on account of the persistently small amount of urea, but the delivery was normal, and, two days after, the urine was free from albumin and casts.

Closely associated with the hyaline cast also is the amyloid change of the kidney, due usually to suppuration, and equally favorable in its outlook if the source of suppuration can be removed. A most admirable example of this occurred in the case of a young woman suffering from a suppurating dermoid of the ovary, from which there was a sinus into the bladder. Here the urine was of a low specific gravity and pale color. Besides containing a large amount of pus, it also had great numbers of hyaline casts, yet, at the autopsy,—which followed an attempt at operative relief,—the kidneys, while somewhat enlarged and containing a few minute abscesses, showed very little pathological change.

In our next class we may place the epithelial, granular (both brown and pale), and fibrinous, all of which indicate acute inflammation of the tubules of the kidney, but of different degrees of severity and different stages of progress. Hence we can very conveniently make subdivisions of these casts as follows: The epithelial casts indicate a very early mild stage of the process, one of mere desquamation, while the renal cells themselves appear —both as seen in the urine and in sections of the kidney in a state of acute nephritis—either absolutely normal or, perhaps, slightly cloudy with nuclei somewhat obscured. The urine next described illustrates this. With an amount of ten hundred and twenty cubic centimetres, specific gravity 1030, and high color, there was a slight trace of albumin, numerous hyaline casts, some with blood and renal cells adherent, considerable free blood, and renal

epithelium. The process may stop here, as in the case above, or we may have following this both brown and pale granular casts, which show a much more advanced stage of the inflammatory process, though still an acute one, as well as one of much greater severity. There will also be associated with this condition a diminution of the solids in the urine, as this case shows: Amount, twelve hundred cubic centimetres; specific gravity, 1019; albumin, large trace; urea, 25 grammes; chlorine, 4.6 grammes; phosphoric acid, 2.15 grammes; sediment, renal cells, some fatty, hyaline, and granular casts, some oily, rarely epithelial, and fatty casts, occasional blood-globules, both free and adherent to casts. This case illustrates another point, which is that few cases go on to recovery without first passing through a fatty stage which is a perfect pathological sequence, the fatty cells and casts representing the effete products of degeneration of the cells, and often ushering in the complete restoration of the tubule, comparable only to the casting off of the dead leaves of the trees in autumn when their nutrition is withdrawn.

In the last category we should place the fatty casts, when numerous and persistent, and the waxy cast, both of which indicate long-continued and essentially chronic inflammation of the kidney, while the latter especially indicates the near approach of a fatal termination. With this condition blood is almost invariably absent, and epithelial cells, even in the fatty form, extremely infrequent, since the tubules have been stripped entirely of their epithelial elements. This can be easily seen by the microscopic examination of a section of any kidney in an advanced stage of desquamative nephritis: tubule after tubule will be seen entirely bereft of its epithelial elements. This condition is, of course, associated with great diminution of the solids of the urine, since in the cell, now no longer present in any considerable numbers, is probably situated the power of selecting those elements which go to make up the solids of the urine. These facts are easily seen in this case: Amount, four hundred and seventy cubic centimetres; color high; specific gravity, 1030; albumin, 1.8 per cent.; urea, 17 grammes; chlorine, 0.59 gramme; phosphoric acid, 0.56 gramme; sediment, many hyaline, granular, and fatty casts, very few epithelial casts; fatty renal cells.

That peculiar combination of pale, granular, and hyaline casts of small calibre, free from fat, is usually indicative of a fibroid kidney, where the cell is lost, not from inflammation *per se*, but by the constant narrowing of the calibre of the tubule, by which the cells are squeezed from their site and hence lose their nutrition, while fewer and fewer cells can be accommodated in their narrowed quarters; perhaps, also, from the fact that an analogous change is taking place in the arteries providing their blood-supply, they die from lack of blood-supply.

As a modification of the latter condition we may see numerous hyaline and granular casts, as well as fatty casts of very small diameter, which prove a union of the fibroid and fatty kidney or a diffuse nephritis. Here there is always a doubtful question presented to us as to which condition

was prior,—an interstitial nephritis becoming parenchymatous, or the latter condition present in a kidney which subsequently becomes contracted.

That we may find all of these casts at the same time must, of course, be acknowledged; but this does not necessarily destroy the validity of our classification, for it is well known that a nephritis is a progressive disease, and while certain portions of the kidney may have undergone the most destructive processes, other portions will be found comparatively unharmed. Therefore from those portions of the kidney that are but slightly affected we may expect to find casts significant of this condition, while from those parts whose functions are almost lost through advanced disease of their tubules, we have the fatty and waxy casts indicative of that state.

We have, further, those extremely broad casts, of any of the varieties mentioned, which are evidence of the implication of the pelvis of the kidney; in other words, a pyelonephritis.

Finally, great emphasis should be given to the fact that the term "casts" alone means nothing, but the kind of casts should be specified, and that each kind of cast has its own significance.

CLINICAL LECTURES.

TYPHOID FEVER FOLLOWING PARTURITION, AS CONTRASTED WITH SEPSIS.

CLINICAL LECTURE DELIVERED AT THE PHILADELPHIA HOSPITAL.

BY E. E. MONTGOMERY, M.D.,

Professor of Clinical Gynæcology, Jefferson Medical College; Gynæcologist to the Jefferson and St. Joseph's Hospitals; Obstetrician to the Philadelphia Hospital.

GENTLEMEN,—The patient I bring before you this morning is a young colored woman, aged twenty. Her father died of some cause unknown; her mother with tuberculosis. One sister and one brother died of tuberculosis, and she has three sisters living and well. She has had measles and diphtheria. She was delivered in her first pregnancy at the Jefferson Maternity some eighteen days since, the child living but one week. The same day her temperature reached 101.2° F., was normal the following morning. The evening of the second day it was 101°, again normal the morning of the third; in the evening 103°; the fourth day 104°, falling to normal on the morning of the fifth. On the eighth day it reached 104.4°. From that time to the fifteenth it was at no time below 101°.

That was the eighth day following her parturition. At that time she entered this hospital, when her temperature was found to be 102°. The highest it has been since entering the hospital is 103°, and it is this morning down to 99.2°. The patient looks quite well, has complained of no pain. She has been ready to eat at all times and feels well. The pulse during the maximum temperature was 120, but for the most part has not risen to as great a degree as the temperature, generally being less than 100. When she entered the house it was noticed that her abdomen was slightly distended but there was no tenderness. You could press over the entire abdomen without producing any discomfort. At present it is not enlarged and not prominent. I notice in looking over the temperature record that, while there has been no distinct diarrhœa, she has a number of times had liquid yellow stools. In a patient presenting such a history the elevation of temperature shortly subsequent to delivery becomes at once a matter of anxiety as to whether it may not be occasioned by sepsis, and when we realize the gravity of such a condition it is important that steps be taken to determine whether such a condition does exist, and if so, what should be done. It should be remembered, however, that the occurrence of parturition does not necessarily prevent the individual suffering from other conditions. Thus she may have malarial or typhoid fever, or develop tuberculosis during convalescence, and these matters should always be considered in looking for a cause. Of course, as we have said, the first suspicion that should occur to you as a possible existence in such symptoms should be puerperal sepsis. A careful physician should be constantly on the alert as to the possibility of its occurrence; consequently as soon as this patient developed a marked temperature she was given douches, the vagina and uterus were irrigated, and quinine in good doses was administered with a view of depressing the temperature. The temperature falling in the morning, rising again in the evening, it was thought desirable to resort to other measures. The patient had had a slight laceration of the perineum, which was sutured, examination was made, the uterus was curetted, but without finding anything to explain the elevation of temperature. There has not been during the entire period subsequent to parturition any indication of offensive lochial discharge. This discharge has been normal. In addition to this the patient has never had any pain nor discomfort; she has been able at all times to have the abdomen manipulated, the uterus has not been sensitive to the touch, nor is there exudation about the uterus, ovaries, or tubes; she has had no indication of inflammatory deposit in the vagina or from the lacerated surface of the perineum, so this patient has presented no positive sign of sepsis other than elevation of temperature. Although the patient lost her child a week after delivery, the breasts have been carefully watched and measures taken to prevent any inflammatory condition. As we go carefully over the history of this patient, the absence of infective symptoms leads us to believe that the abnormal condition is not due to sepsis. In other words, the elevation of temperature was not a result of septic

infection. We have, then, to consider other possibilities. Is this condition one of malaria? As we look at the temperature record we do not find, excepting the first two or three days, that it presents the typical course of a malarial condition. There has been no history of chills; there was no time when the temperature subsided below normal, as we should expect to occur if the condition were one of pure malaria. It has not been modified by the administration of quinine. The temperature record is one which gradually increased, then ran a moderate course, and subsequently subsided.

Having excluded malaria, we take up the consideration of tuberculosis. In regard to this subject, the probability is certainly very great when we consider that this patient lost her mother and two sisters from tuberculosis; that she herself—colored, or rather a mulatto—belongs to a class which is particularly subject to this disease; that the conditions have been most favorable for its development, as she lives in a portion of the city that would indicate that she was probably poorly nourished; she was pregnant illegitimately and but twenty years of age, all of which conditions would favor the probability of tuberculosis. The temperature record has resembled very closely that which we should find in a woman suffering from acute tuberculosis, and it is well to keep in mind the fact that this disease is not unfrequently mistaken for typhoid fever. Patients are treated for typhoid fever when the disease is a rapid form of tuberculosis. We have in this patient, however, absence of all the secondary signs of the disease, the respiration is not more frequent than we should expect to find in a woman with such an elevation of temperature. We do not think the increase in the pulse characteristic of tuberculosis. We have had an absence of the profuse perspirations. It is true, tuberculosis may affect other portions of the body than the lungs, but there is an absence in this patient of any indication of localized tuberculosis. There is no possibility of it occurring in the peritoneal cavity with as little disturbance of the abdomen as is found in this patient. Then, too, of late there has been a gradual subsidence of the temperature, until to-day it is $99\frac{1}{5}°$. This does not necessarily exclude the possibility of tuberculosis, although it affords a presumption that the patient is not suffering from such a condition, when we find in the third week following parturition the temperature has gradually subsided, going down each day. We are left, then, confronted with the possibility of this being a case of typhoid fever. As we have before remarked, the convalescence from the parturition does not prevent the possibility of some intermittent trouble. We have this patient with the elevated temperature the same day of her confinement, which might be due to reaction from the confinement itself, and this continued with rather marked variations during the first week, when it reached a mean elevation of temperature about the eighth day. From the eighth to the sixteenth day there has been a temperature running along with only slight variations between the morning and evening. From the latter date there has been a gradual subsidence,

the temperature becoming lower each day until at present it is 99⅕°. It is true there has been no history of diarrhœa, but there have been stools liquid and yellow in color, so that I am inclined to believe we have had in this patient an attack of typhoid fever, which has influenced the course of her convalescence, and an entire freedom from sepsis. I take great pleasure in showing you this case, which illustrates the importance of careful investigation of symptoms which may present themselves, and the possibility of other diseases affecting the course of convalescence after parturition. The history of this case in its course leads me to recur to some statements that I made before the Pennsylvania Medical Society in discussing the subject of puerperal convalescence, in which I had advocated the course of treatment we instituted when elevation of temperature followed the delivery of the patient. Supposing the physical signs had justified the supposition, in this case, of puerperal sepsis, then we would have had an entirely different course to pursue. Sepsis usually discovers itself about the second or third day following delivery, and while it is more likely to occur within a week or ten days, we now know that it may occur at any period within two or three weeks. Whenever there is an opportunity for infection we may have sepsis result. We formerly limited the time of the infection to the time immediately following the delivery, and if any trouble occurred later it was not called puerperal fever, but we now realize the condition is purely one of sepsis, and that surgical fever is just as applicable to the obstetrical cases as to any other traumatism, and with this in view we come to realize the fact that the more carefully the patient is treated, the more nearly we can imitate the surgical standard, the less likely is she to have septic infection. It is true that in country practice, where patients have pure air, and a strong healthy constitution, they are less likely to the development of septic troubles, but even in these cases, as in surgical operations, if the patient is neglected, septic infection may influence the life or health of the individual. With the manifestation of sepsis, the patient generally has repeated rigors. You will generally find certain local symptoms which are distinguished according to the particular organ involved. Most frequently infection takes place through the uterus, giving rise to endometritis, and from it extending through the tubes into the peritoneum, producing a localized peritonitis, or it may pass into the lymphatics, giving rise to lymphangitis, or through the blood-vessels, producing phlebitis. If confined to the uterus we may have an endometritis or metritis, or, extending to the tubes, a salpingitis. It is well to remember that poison may enter through the mammary glands; a patient may have a fracture of the nipple through which septic material enters, and infection of the mammary gland, giving rise to abscess. This portion of the subject, however, we will not discuss.

The course of sepsis varies greatly according to the structure involved. Where it extends through the endometrium to the tube, it may rapidly become self-limited, peritonitis occurs, closing the abdominal end of the tube,

and a localized collection of pus in the tube may result; or we may have infection passing through the tube involving the ovary, giving rise to a localized ovarian abscess. When the poison enters the structure of the uterus through the uterine sinuses, its progress is much more rapid. It is accompanied with marked elevation of temperature, reaching at times 107° and 108°. I remember well, during my term of residence in this house, an epidemic of puerperal fever, in which a colored woman had a temperature reaching 107°, which was only reduced by the application of the cold pack and pouring ice-water over her. By this means it was several times brought down to less than 101°, but would in a few hours again ascend. Finally the patient died with a temperature of 108°. The autopsy disclosed less than a teaspoonful of pus in the uterine sinuses of one side of the uterus. This was a case in which the poison entered through the blood. I saw a similar condition in a patient in this city who died at the end of a week after her delivery. I saw the patient about the fourth day after confinement, and, although she had been curetted, the temperature again rose, and she was then subjected to an abdominal section; we found a number of collections of pus in the uterine walls. The uterus was removed, but the patient died in twenty-four hours with a continuation of high temperature. The poison had entered through the blood-vessels, and the patient died, notwithstanding our efforts to save her. The passage of the poison to the tubes is possibly the most fortunate result that can occur in these cases. The poison sets up an irritation that causes it to become a closed sac, and the chances for the patient, even though operation be not immediately done, are better than if the poison had entered through other channels. Of course I would not advocate delay in such cases, as we know the sac may become thin and rupture, and give rise to rapid collapse and death. When we consider the probability of the patient being crippled for life by the necessity of the removal of important organs, the functions of which, even if not removed, have been destroyed, we can appreciate the importance of early treatment of the symptoms, the necessity for the physician to be on the alert in every case, to limit the ravages resulting from the infection; so in this patient, although there was an absence of some of the physical signs indicating sepsis, the uterus was promptly curetted, thoroughly irrigated, and she was watched with the greatest care to observe the development of secondary signs of sepsis, with the determination to resort to operation, if necessary. When the patient was admitted to the house I was informed of her condition, and was asked to examine her carefully and watch for secondary developments, which would render it necessary to open the abdomen. In the paper to which I have referred, I suggested that the most careful examination of such cases should be made to ascertain the cause; that the cavity of the uterus should be explored, and, if necessary, thoroughly curetted. The treatment should not be simply irrigation of the uterus, which is the customary resort, for the surface of a uterus covered with decidua cannot be sterilized by irrigation; though strong germicides be used, sterilization will

be superficial, while beneath the *débris* colonies of germs multiply, producing ptomaines which are continually absorbed, keeping up an elevation of temperature. While irrigation is all right, it is insufficient. When we realize the rapid spread and the influence upon the individual, it is exceedingly important that the cavity should be sterilized. Thorough curettage of the uterus is very necessary in order to remove the seat of development of the products. Having curetted it, then sterilize by irrigation with bichloride of mercury. Having thoroughly irrigated the cavity, we exercise measures to secure thorough drainage. We have had a canal loaded with colonies of germs, ready to manifest themselves where favorable soil presents. Even though we have taken measures to render sterile the vagina and uterus, we are not absolutely certain it is complete or will remain so; therefore, it is desirable to use means to keep the uterus drained. This is best accomplished by the use of gauze drainage, inserting a good twist of iodoform gauze to the fundus of the uterus.

I can best illustrate the course of actual sepsis by the history of the case which I will now recount. A woman had been confined in her first labor, which was not difficult, but there was a slight laceration of the perineum. She was subjected to intra-uterine irrigation. Three days later her temperature reached 103°; she had a chill; the uterus was irrigated two or three times daily. Her temperature at the end of a week had reached 106°. I was called to see her to determine whether there was any abdominal trouble. I found no enlargement of the ovary and tubes, and no fixation of the uterus. Introducing my finger into the cavity of the organ, as soon as the cervix was stretched there was an unpleasant odor; the curette was used and a considerable amount of offensive material removed. The cavity was irrigated with sublimate solution and a strip of iodoform gauze carried to the fundus. Her temperature subsided, and for forty-four hours remained normal. After this her temperature ran from 99° to 101°; the pulse was a little more rapid than normal. This continued for three weeks, when suddenly her temperature again rose to 106°, attended with severe rigors. I was again called to see her, and found no enlargement, and hoped that the rise of temperature might have been produced by some temporary cause. I suggested waiting forty-eight hours, and if the temperature continued high an operation should be done. We operated within thirty-six hours, found the left ovary four times and the right twice its normal size. Both organs seemed to be œdematous, but there were no adhesions and no appearance of inflammatory trouble. The uterus was firm and healthy. Projecting from the orifice of the left tube was a small piece of lymph, and a similar piece was attached to the corresponding ovary. The tube was not, however, enlarged, apparently no inflammation, nor was that of the other side. I removed the ovaries and closed the abdomen. The ovaries were then examined, and the left was found to contain a teaspoonful of foul, greenish pus. The temperature subsequently subsided and the convalescence was normal, the patient fully recovering her health.

In this case the infection had evidently travelled through the tube without setting up inflammation in it, and had reached a susceptible ovary, producing an ovarian abscess. Such a case as this illustrates the importance of prompt operation. Had we been able to resort to curettage of the uterus earlier, it is quite probable the infection might have been limited to its cavity. In the case we have seen this morning, the importance is emphasized of careful analysis of all the symptoms, other than those in the pelvis, which may present themselves. If the patient had presented any symptoms about the abdomen, if there had been a marked elevation of pulse, if there had been indication of extension of inflammation from the uterus to the surrounding structures, involving the ovaries and tubes, we should have been justified in believing the condition to be one of sepsis. In discussing the cause of pelvic inflammation, you will probably find the most frequent cause is not, as is generally supposed, gonorrhœa, but sepsis following either an abortion or parturition,—parturition in which proper care has not been observed on the part of the physician or attendant to prevent infection. It is true that such patients often die. They may live, but their subsequent lives will often be so uncomfortable that death would have been preferable. In cases of sepsis, even where recovery seems to be apparent, where the temperature is but slightly elevated, running from 99° to 100°, with a rapid pulse, you should never feel that your patient is out of danger. You should realize that there is some centre of infection, a source of danger to her, for which she should be carefully watched until the temperature becomes normal. I remember a woman in this house who had an attack of sepsis and had apparently recovered. Her temperature, however, would run from 99° to 101°, rarely normal, and her pulse was constantly rapid. About five weeks after her delivery, when she was going about the ward, she was suddenly taken with symptoms of collapse and died within less than forty-eight hours. Upon opening the abdomen of this patient the entire fundus of the uterus was found to have been sloughed off; the remaining portion of the organ looked like a funnel. This had been the source of the continuous elevation of temperature, and, breaking down, gangrene had resulted in the collapse.

I hope the presentation of this case, and its discussion with reference to sepsis, may be of value in impressing you with the importance, not only of preliminary examination, but of the thorough analysis of the symptoms.

DIFFERENT FORMS OF TUBERCULOSIS OF THE KNEE.[1]

CLINICAL LECTURE DELIVERED AT THE PITY HOSPITAL.

BY DR. LEJARS,

Paris,

Professor (Agrégé) of the Paris Faculty, and Surgeon to the Pity Hospital.

GENTLEMEN,—I will show you to-day some general types of the localization of tubercular trouble when it is found about the articulations.

This young man, aged seventeen years, presents the regular form of tubercular osteo-arthritis of the knee. He came into our wards more than two months ago with a large painful knee, distended with fluid. The usual conservative methods were tried with immobilization and compression; and, while I am speaking of this, let me say that compression of the knee must be well done with a plaster cast that goes well up to half the thigh and down to the middle of the leg, and with this a good rubber bandage should be used, which is slightly tightened at first, and carefully and fully so later on. Under this treatment the knee became smaller; but when the compression-bandage was removed it returned to its swollen state, the extremities of the bones increased in thickness, and the pain in its severity. Surgical intervention now seemed necessary, and resection has been decided upon.

The diagnosis of tuberculosis is not so positive in every case. White swelling will sometimes look like a gonorrhœal rheumatism or a simple arthritis. A poor boy that we have had in the wards for the past three years, whose case may be called polyarthritis of tubercular nature, came to us in the winter of 1891 with the left elbow-joint enlarged, swollen, and painful. It looked like a gonorrhœal rheumatism; but he denied having had the disease. The articulation under compression soon lost its red look and showed a white swelling of a very bad nature. After two months a resection of the joint was made, but the disease returned and the limb was amputated. Before the stump was fairly healed the knee of the same side became affected in a similar manner. Compression, injection of chloride of zinc, etc., failed, and in a few weeks the osteo-articular lesions were so far advanced that we had to amputate the thigh. The metacarpo-phalangeal articulation of the right hand was then found to be affected, and a resection of the thumb was followed by amputation. The right knee was afterwards found to be in the same state, but the poor fellow could no longer be operated upon.

For more than two years of this martyrdom the lungs have kept in good condition, but to-day he showed me a basin of blood, thus proving that at last they also are affected with the same disease.

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[1] Translated by Thomas Linn, M.D., of Nice.

Acute arthritis at the elbow and knee makes diagnosis difficult, but in cases where there has been no gonorrhœa or traumatism, it is well to think of tuberculosis. Powel, in a thesis in 1874, gave cases of this nature, and Chamorel also, in a later paper, but they are rare.

What König and the Germans call "tubercular hydro-arthritis" is, on the contrary, quite frequent. I lately showed you such a case in a man, thirty years of age, who had a swelling of the right knee, without pain or traumatism, the joint being distended with fluid, and quite tender. Puncture was made, and compression applied for two weeks, then the patient left the hospital, although the synovial membrane felt thick, and a little fluid remained. I should not be surprised if he came back soon with a new hydro-arthritis. [The patient returned to the hospital a few days afterwards with a new swelling of the knee.] These articular effusions are not at all rare in children.

But let us speak of the confirmed cases of tuberculosis of the knee, of which our young patient of to-day is a type,—the classical tubercular osteo-arthritis. The whole articulation and the bones themselves are equally attacked in this case, so it is too late to say where the process began, but we know that the extremities of the long bones are most frequently the starting-points.

Several authors have tried to localize the initial foci. Professor Ollier, of Lyons, found that in twenty-eight cases of tuberculosis of the knee it began in the tibia seventeen times, the femur nine times, and the patella twice. Willemer reports twelve cases, of which eight began in the tibia and four in the femur: Guillemain, in sixteen cases, gives the tibia in twelve, the femur in three, and the patella in one. It is important to remember that these bony foci are mostly inaccessible; in the femur, for instance, they occupy the intercondylian space, or are behind the condyles.

The synovial cavity may be the seat of the attack. This form is called by Bonnet tubercular pyarthrosis. You saw such a case in the wards lately, in which cheesy pus was found in the synovial cavity.

Fungoid synovitis of the knee is another common form of this disease, in which the process seems limited to the synovial membrane. According to the theory and practice of synovectomy, careful dissection of the synovial membrane should cure the disease; but it is not always entirely satisfactory, as is shown by the following case:

A young woman with fungus hygroma of the knee had the patella removed and the synovial membrane extirpated, following it behind the tibia and femur. The cartilages seemed brilliant, and the bones were in a good condition. The wound was closed, but the disease returned, and amputation of the leg became necessary.

I have seen a form of white tumor of a myxomatous nature. On opening the articulation a yellow, gelatinous, translucent mass was found. Still another form affects the extremities of the bones, and causes early deformity. These cases are usually a diffuse tubercular epiphysitis, or what is called white swelling of a hyperostosic form.

Finally, you have seen here lately a rare type of tuberculosis, which I have not yet mentioned. You will remember a man about forty, who had been sent to us from the medical wards for a chronic affection of the knee. The right knee had been enlarged for two years, but had become much worse during the past two months. It was very large and painful, but the bony lesions did not seem important. A resection was thought advisable. On opening the articulation an enormous quantity of blood and clots filled the cavity. On removing them a large cavity was found, which extended into the internal portion of the internal condyle of the femur and passed upward into the bone. The whole end of the bone seemed soft and friable. As amputation seemed his only chance, I stopped the chloroform, and when the patient was well awake I told him of the necessity for an operation. He consented, the thigh was amputated, and to-day he is well.

I show you now his femur, and you can see the enormous irregular cavity which passes through the bone and upward into the medullary canal.



Case of hemorrhagic osteitis of the femur.

In considering the many different varieties of this very common affection, a question of great interest is, Which of these cases are spontaneously curable and which can be cured by the conservative methods, consisting of profound revulsion, immobilization, and compression, with internal treatment?

You will find in practising surgery that many apparently benign cases will do very badly, and often you will not operate in time to save cases that might be saved by prompt operation.

REVIEW OF MEDICINE.

MEDICINE.

IN CHARGE OF JUDSON DALAND, M.D.,

Instructor in Clinical Medicine and Lecturer on Physical Diagnosis in the University of Pennsylvania; Assistant Physician to the University Hospital; Physician to the Philadelphia Hospital and to the Rush Hospital for Consumptives; Fellow of the College of Physicians of Philadelphia.

Notes on the Observation of Malarial Organisms in Connection with Enteric Fever. (*American Journal of the Medical Sciences*, August, 1894.) By W. Gilman Thompson, of New York City.

After a short review of the relations existing between typhoid fever and malarial fever, and also a reference to the Woodward theory, that the simultaneous presence of the typhoid fever and malarial fever poisons produces a third independent or hybrid affection, called "typho-malaria," the author presents a detailed report of three carefully-studied cases of typhoid fever, in two of which the malarial body was found, and the third contained abundant malarial pigment granules. In the first case reported the plasmodium became active during the course of the disease, while in the second and third cases the malarial organism remained latent until the *force* of the enteric infection had been nearly expended. These cases distinctly prove that both typhoid and malarial fever may exist simultaneously, a fact that has been disbelieved by many good observers. It is also clear, from the evidence presented, that the combination of these two poisons does not produce a third definite disease, but that each process goes on side by side. In two of the cases the malarial poison was latent until the resistance of the body had been reduced by the typhoid poison.

The Physical Examination of the Spleen and Kidneys. (*Edinburgh Medical Journal*, August, 1894.) By Alexander M. Stalker, of Dundee, Scotland.

The author points out that percussion, as a method of examination of the spleen, has been employed for some years, but that palpation has been used only during the past decade. As a proof of the value of this additional means of examination of this organ he mentions that, at the Middlesex Hospital, *previous* to 1883, mention of enlargement of spleen was rare, and only occasionally was the organ palpable; but *during* that year, in one hundred and fifteen cases of enteric fever, an enlarged spleen was noted in eighty-four, and in forty an especial note was made that the organ was palpable. The following method is recommended by the author to detect the spleen by palpation:

The examiner stands to the right side of the patient's bed, and places his warmed hand gently on the abdomen, bringing it into the left hypochondriac region, close under the ribs.

If the enlargement is very distinct and the lower edge of the spleen projects constantly below the ribs, it may at once be felt; if not, the patient is directed to take a deep breath, when the spleen, if enlarged, will probably come down, striking with its firm edge against the palpating fingers. If this fails to give a positive result, success is sometimes attained by turning the patient well round on the right side and, with the knees drawn up, repeating the procedure.

The hinderances to success are as follows:

1. The abdominal wall may be passively rigid, either from muscular or fatty thickness, or from the tension of liquid effusion.

2. The incoördination of the voluntary breathing movements, by which it is impossible to secure the deep inspiration that pushes the spleen downward towards the palpating hand.

3. Respiration may be painful, as in pleurisy, pneumonia, etc.

4. There may be tenderness of the abdominal wall, due to the functional hyperæsthesia, or great tenderness from peritonitis.

Occasionally palpation of the spleen is more readily performed in consequence of emaciation produced by disease, or from marked stupor, permitting the abdomen to be freely handled without causing pain, or allowing of deep inspiration in pleurisy, etc., the brain not appreciating the sensation of pain. The author does not believe that the consistency of the spleen in acute affections constitutes any difficulty in detecting this organ by palpation.

Relationship between Ulcerative Colitis and Granular Kidney-Disease. (*Edinburgh Medical Journal*, August, 1894.) By Gilbert A. Bannatyne, of Bath, England.

The author reports two cases illustrative of the relation existing between these two conditions, and the chief points in the history of the cases are here noted.

The first case had been suffering with diarrhœa for three weeks, and the motions were watery and occasionally contained blood, with but little tenesmus. Later he had severe diarrhœa with hemorrhage. The urine was copious, of low specific gravity, and contained a trace of albumin, but no casts were detected on the day of admission. Post-mortem showed peritonitis, especially in the cæcal and colonic regions, and the peritoneal cavity contained intestinal contents. There were two perforations in the ascending colon, one in the transverse portion and one in the sigmoid flexure. Those in the ascending portion were nearly one inch in length, and had ragged and dirty-looking edges. The mucous membrane was intensely injected, soft, and friable. The colon was studded with large and small ulcers, some running longitudinally and others transversely. They were irregular in shape, had dirty, rough floors, and in some cases extended almost through

the submucous layer. There were no submucous hemorrhages nor stainings. The kidneys were found to be small, with adherent capsules. The cortex was diminished and redder than usual, and here and there small cysts were found. A section of one of the small ulcers showed that the surrounding tissues were distended with round cells, and the blood-vessels were engorged, but their walls showed no fibrosis.

The second case was one of long-standing Bright's disease, in the course of which dysenteric symptoms occurred, death ensuing from uræmia. At the autopsy both kidneys were found to be smaller, heavier, and darker in color than normal. Their surfaces were rough, and the capsules firmly adherent. The cortex was atrophied, and cysts were visible to the naked eye. The usual microscopic changes were noted. The heart was enlarged, especially the left ventricular wall. There were numerous submucous hemorrhages and a few ulcers, most of which were small in size, shallow, and never extending through the submucous layer, nor causing peritonitis. They were not surrounded by inflammation. Most of these ulcers arose in connection with hemorrhagic effusion, the floor of many consisting of a clot of blood. The walls of the small blood-vessels showed well-marked sclerosis.

In Case I. the intestinal symptoms were prominent throughout, and the nephritic symptoms were in abeyance. The autopsy showed that the renal change was not advanced. The colon showed evidences of intense inflammation and perforating ulcers. The microscope demonstrated no arterial fibrosis. It was plain that here the ulcerative colitis was primary, and that the renal conditions were associated, whereas, in the second case, the renal symptoms were prominent from the beginning, and the patient died in uræmic coma. Microscopic examination of the colonic ulcers showed that the blood-vessels were sclerotic. Each ulcer was apparently preceded by a hemorrhage, and there was but little evidence of inflammation.

Bone-Marrow in the Treatment of Pernicious Anæmia. (*British Medical Journal*, June 2, 1894, p. 1172.) By Thomas R. Fraser, of Edinburgh.

The author reports a very interesting case presenting the clinical features of pernicious anæmia, in which three ounces of uncooked bone-marrow were given by the mouth daily. After twenty-seven days the red blood-cells, which were 1,860,000, increased to 3,900,000, and the hæmoglobin from twenty-eight to seventy-eight per cent.

An Extreme Case of Ascites. (*Medical World*, March, 1894.) By C. C. Cotton, M.D., of Point Isabel, Ind.

Mr. G. M. H., who was fifty-one years old at the time of his death, had been subject to ascites for three and one-half years. During this period he was tapped one hundred and sixty-seven times, and three thousand five hundred and sixty-one pounds of fluid were removed. Of these operations

over one hundred were performed by the patient's own hand. The following table gives the increase in the frequency of the tappings, and the decrease in the amount of fluid removed at each period.

Time.	Number of Times tapped.	Average Quantity of Fluid removed.	Total Quantity of Fluid.
6 months.	7	30 pounds.	210 pounds.
1 year.	34	27 "	918 "
1 "	55	21 "	1155 "
1 "	71	18 "	1278 "
3½ years.	167	21.32 pounds.	3561 pounds.

The Mild Character and the Diminished Prevalence of Syphilis, and the Infrequency of Visceral Syphilis. (*Medical News*, August 11, 1894.) By J. H. Musser, M.D., of Philadelphia.

This writer says, "In the Philadelphia Hospital, the only institution in Philadelphia in which early syphilis is treated, there has been a progressive diminution in the number of cases of syphilis, notwithstanding the increase in the population of the community, and despite the fact that the statistics were begun just after the war, at a time rife with such diseases. Syphilis is at present a mild disease. Tertiary manifestations are not common. Visceral syphilis is rare. If pulmonary and other forms of visceral syphilis are rare, is it not possible that the so-called syphilitic lesions of the arteries and nervous system are due to other causes?"

Infectious Purpura. (*La Médecine Moderne*, 1894, No. 8, p. 126.) By Lebreton.

The writer gives the history of the case of a girl eighteen years of age, a child's nurse, who, forty-eight hours after violent emotion, showed the following symptoms: violent headache and backache, chills, fever, and repeated epistaxis. After twelve hours confluent purpuric spots appeared on the arms, hands, thighs, and the gluteal region. The eruption on the body was discrete. Subcutaneous injection of ether and caffeine and inhalations of oxygen were given to prevent the syncope, which caused grave apprehensions. The spleen was enlarged and the surface of the body was cold. After some days the alarming symptoms gradually subsided and the patient recovered. Cultures made from the blood and urine showed numerous colonies of the staphylococcus pyogenes albus. The seat of invasion of the microbe was unknown. No furuncle, impetigo, angina, nor other suppurating affection was found in the family.

In discussion Gridal mentions the organisms that have been found in infectious purpura, and suggests that they may all be secondary to some primary lesion. Mathieu speaks of the difficulty found in diagnosing infectious purpura from hemorrhagic variola, but thinks that in the absence of bacteriological investigation this case would be considered as of neuropathic origin.

THERAPEUTICS.

IN CHARGE OF ALEXANDER D. BLACKADER, B.A., M.D.,
Professor of Therapeutics, McGill University, Montreal, Canada.
ASSISTED BY
D. I. EVANS, M.D.

On the Extent to which the Absorption of Guaiacol is Modified by its Admixture with Other Excipients. (*Lyon Méd.*, July 15, 1894, p. 363.) By O. Stourbe, M.D.

In this paper the writer gives us the results of his experiments concerning the rapidity of the absorption of guaiacol by the skin. He applied it epidermically, 1, in the pure state; 2, mixed with an equal quantity of glycerin; 3, mixed with an equal quantity of oil of almonds. In each case about half a drachm of guaiacol was employed. The amount of absorption was determined by the examination of the urine, one, two, three, five, and fourteen hours after the application of the guaiacol. He found that pure guaiacol passes rapidly into the urine, but when mixed with glycerin its absorption was much retarded. Oil had distinctly less modifying power. The following table represents the rapidity of absorption as shown by the amount of guaiacol passing into the urine:

	One Hour After.	Three Hours After.	Five Hours After.	Fourteen Hours After.
Guaiacol pure.....	1	1.19	2.16	0.51
Guaiacol with oil.....	*nil.*	0.32	0.32	1.19
Guaiacol with glycerin.....	*nil.*	0.016	0.419	0.90

Antipyretic Effects of Internal Applications of Guaiacol. (*British Medical Journal*, July 7, 1894.) By Alfred H. Carter, M.D.

In a short review of the effects of this drug, based upon one hundred and fourteen personal trials made upon thirteen cases (febrile phthisis eight, acute pneumonia two, healthy persons two), the temperature was reduced in one hundred and four instances. There was no reduction in ten instances, but in five of these the temperature was normal at the time of application. Guaiacol was found distinctly more energetic than creosote. The fall usually began at once, but occasionally there was a slight rise in temperature for the first hour, after which the fall was abrupt. After reaching the minimum in an average time of about three hours, the temperature again began to rise. In two cases of phthisis the mean daily temperature was persistently reduced, and in one of these the temperature became practically normal under its use. The application was liable to produce smarting, and sometimes a distinct dermatitis. Marked general sweating was almost invariable. If the temperature fell below normal there were symptoms of collapse, but only once to a serious extent. Associated with these symptoms there was occasionally a feeling of nausea, and an indescribable sense of

sinking, very distressing to the patient. He considers that guaiacol used in this way is a valuable addition to our list of antipyretics, that it may sometimes be of value as an eliminant, by virtue of its diaphoretic effects, and that by reason of its antimicrobic properties, and the large amount which can be introduced into the system, it is likely to be of service as an internal antiseptic, especially in the treatment of phthisis.

On the Value of Quinine as a Remedy in Cholera. (*New York Medical Journal*, August 18, 1894.) By E. B. Fullerton, M.D.

In this paper, which appears under the title of *Is there a Better Remedy in Cholera?* the writer strongly advocates the use of quinine, given either in powder or in solution by the mouth, as a remedy in this disease. Reviewing the list of remedies which kill the germs, he says that it is manifestly impracticable to kill the spirilla outright in the intestinal tract of a human being whom we expect yet to live, hence he looks for the least harmful inhibitant, which he considers undoubtedly to be quinine. Twenty or forty grains of quinine, given by the mouth, is sufficient to inhibit the development of the microbe in any quantity of the rice-water exudate presumably present in the alimentary canal. Absorption takes place to a very small degree on account of rapid peristalsis. Therefore symptoms of cinchonism are not noticed, even after repeated doses. He quotes statistics to show that in those cases where it was given in full doses by the mouth it has lowered the mortality in severe cases to twenty-five per cent., and only in those cases where it has been given hypodermically did it prove ineffectual. At the same time other means of treatment should be made use of, as may be found necessary; the application of heat to the body, saline subcutaneous injections, and morphine, and small doses of calomel for the diarrhœa.

On the Treatment of Tapeworm. (*Lancet*, August 4, 1894.) By Leslie Ogilvie, M.B.

The writer refers to the frequency with which the parasite is treated without success, as evidenced by the reappearance of the proglottides in the evacuations after the lapse of three or four months. He thinks it is not a question of the particular drug to be used, but of the method of using it, and considers the directions as ordinarily given in text-books very defective. As an antecedent purgative he prefers sulphate of magnesium with jalap, which he repeats several times before he administers the vermifuge. The latter is given in two doses, of a drachm each, at intervals of an hour. Two hours after the last dose he clears out the bowels again with a dose of castor oil and tincture of jalap. In this way he thinks he secures the most powerful effect on the worm with the least effect on the patient. He claims to have been successful in the complete removal of the parasite in thirteen consecutive cases. He considers it of importance to prepare the patient for a few days previously by dieting, and recommends the physician

always to pay a visit to the patient shortly after the second dose of the vermifuge, and to inspect himself all the evacuations, which for convenience he directs to be passed into a weak solution of potassium permanganate.

SURGERY.

IN CHARGE OF HENRY R. WHARTON, M.D.,

Demonstrator of Surgery and Lecturer on Surgical Diseases of Children in the University of Pennsylvania; Surgeon to the Presbyterian Hospital, the Methodist Episcopal Hospital, and the Children's Hospital; Consulting Surgeon to the Presbyterian Orphanage.

AND

JOSEPH P. TUNIS, A.B., M.D.,

Assistant Demonstrator of Surgery in the University of Pennsylvania; Surgeon to the Dispensaries of the Presbyterian, Methodist Episcopal, and Children's Hospitals.

Incision of the Cystic Duct for the Removal of Impacted Gall-Stones. (*Archiv für klinische Chirurgie*, 1894, vol. xlviii., No. 3.) By Hans Kehr, M.D., of Halberstadt.

Out of the seventy-seven times in which the writer has opened the abdominal cavity for the removal of gall-stones there were twenty-six cases in which the concretions were more or less firmly impacted in the cystic duct. Of these twenty-six cases an incision had to be made into the duct in seven, the opening being then sutured (cystico-lithectomy), with a favorable termination in all. The history of a case is added, from which the author learned that any delay in the removal of stones from the cystic duct should not be tolerated.

A female, aged twenty-six, had been suffering for a long while with gall-stones, which condition was not alleviated by internal medication.

Cystotomy was performed on May 18, 1892; the opening never discharging bile, but only mucus. Six months later, obliteration of the duct not having occurred, a sound was introduced fourteen centimetres into the supposed cystic duct. A concretion was felt, and various means were now used to remove it: injection of water, sounds of various sorts, such as Tait's and Riedel's gall-stone forceps, dilatation of the fistulous opening in the gall-bladder and the duct with laminaria tents, resulted only in pain to the patient. The stone was always felt in the same situation, and never moved. One year after the first operation the abdominal cavity was opened through a long incision in the linea alba, midway between the xiphoid cartilage and the umbilicus. The cystic duct was readily seen; the gall-bladder was large, its situation being but slightly changed. The stone in the cystic duct could easily be felt, and was perfectly immovable. Failing to press the stone into the gall-bladder an incision was made into the wall of the greatly hypertrophied duct, directly over the gall-stone. Extraction was then easily accomplished. The suturing of the opening was done with great care by a double row of sutures. A small drainage tube was introduced into the fistulous opening of the gall-bladder. The abdominal wound was securely closed with deep and superficial stitches. The operation lasted one hour, and was not followed by any rise in temperature. Bile immediately flowed, the mucus fistula being converted into a true bile fistula, the latter closing itself in the course of three weeks.

The author has changed his former opinion both in regard to the danger and time of the operation, and now advises that a stone in the cystic duct be removed at once, instead of in two operations, as formerly advised by himself. The method employed is as follows: The abdominal cavity is opened by a ten-centimetre incision in the right rectus muscle. The right hand is then introduced, adhesions being broken up until the cystic duct is exposed. If a stone is felt an attempt is made to press it into the unopened gall-bladder. This is the more easily accomplished by Lauenstein's position. If this does not succeed, the gall-bladder is aspirated, and a Dieulafoy introduced into the fundus. Bimanual palpation is now adopted, the index-finger of the left hand, or, when this is too short, a thick sound, a Riedel gall-stone forceps, or other instrument, is placed in the cystic duct, the right hand having been introduced into the abdominal cavity and pressed upon the wall of the duct over the stone. This pressure should not be too severe, in order that the wall be not injured or the stone broken. The author does not ordinarily approve of crushing the stone, as he is afraid of fragments getting into the common bile-duct and there setting up trouble. Sponges are then placed in the abdominal cavity for the purpose of catching any bile which may not have been removed by the aspirator. Pieces of sterilized gauze, tied with a thread, are then introduced into the gall-bladder, so that the internal surface is thoroughly dried. These can later on be easily removed. The size, situation, etc., of the stone will determine whether or not the stone can be left to be removed by nature later on. This was attempted in the case above described, but failed. If the condition of the patient permits, and the situation of the cystic duct is such that the stitches can easily be introduced, a similar operation to that of choledochtomy is now done at once. The author has successfully performed the above primary operation in five cases.

The Incision made in the Abdominal Wall in Cases of Appendicitis, with a Description of a New Method of Operating. (*Annals of Surgery*, July, 1894.) By Charles McBurney, M.D.

In discussing the incision for appendicitis the author says that the defective result which often follows the section of tissues either at the linea semilunaris or in the muscular wall outside of this line, with the frequent occurrence of hernia, is due principally to imperfect repair of the muscular fibres of the internal oblique and transversalis, which are cut at right angles to their course, and by retraction separate the edges of the wound. He has obviated this difficulty by the following method: The incision in the skin is made nearly at right angles to a line drawn from the anterior iliac spine to the umbilicus, its upper third being above that line. Corresponding sections of the external oblique muscle and aponeurosis are then made, great care being taken *not to cut any fibres across*. The edges of the wound are pulled apart with retractors, and the fibres of the internal oblique and transversalis muscles are separated with a blunt instrument in a line parallel

with their course. Retractors should now be introduced into this in turn, and the edges separated. The transversalis fascia is then divided, and the section of the peritoneum is made.

Two extra assistants are required for the retractors, one holding open the superficial wound from side to side, the other separating the edges of the deeper wound from above downward. After removal of the appendix each tissue is sutured separately, and when completed, "the gridiron-like arrangement" of the muscular and tendinous fibres is almost completely restored.

This method of operation is said to show several advantages: as muscular and tendinous fibres are not divided, so muscular action cannot draw the edges of the wound apart. Very little bleeding occurs, and pain is almost absent.

Simultaneous Ligation of Both Internal Iliac Arteries for Hypertrophy of the Prostate Gland (Bier's Method). (*Annals of Surgery*, July, 1894.) By Willy Meyer, M.D.

The writer reports the performance of this operation on a man fifty-five years old, who had suffered from complete retention of urine for the preceding six months. A cystoscopic examination revealed an hypertrophy of the prostate and bilateral pyelitis. The bladder held a quart of fluid. The patient weighed two hundred and thirty pounds.

The internal iliac arteries were ligated as suggested by Bier. A marked result was obtained in a short time. Twelve hours after operation the patient passed two ounces of urine in a fine stream. Small quantities were voided during the following fifteen days. He then passed larger amounts, and with a satisfactory stream, but catheterization was still necessary. This showed loss of the muscular power of the bladder, which was regained to some extent when the patient walked about.

Six months after operation the prostate was almost normal in size. The residual urine was still considerable, ten to twenty-four ounces. The length of the urethra has been reduced from twenty-three and a half centimetres to twenty-one and a half centimetres.

The author considers the result obtained extremely encouraging. He intends in future to simplify the act of ligation by using one silk ligature applied after opening the sheath, or around the vessel and its sheath. The double extraperitoneal incision he considers preferable to the single transperitoneal, as old and often very stout subjects do not bear intraperitoneal interference as well as younger ones.

ORTHOPÆDICS.

IN CHARGE OF REGINALD H. SAYRE, M.D.,
Assistant to the Chair of Orthopædic Surgery, Bellevue Hospital Medical College, New York.

Excision of the Knee for the Relief of Crippling from Infantile Paralysis. (*American Therapist*, September, 1894.) By A. Morgan Vance, M.D.

In reporting seven cases in which he had operated, the author draws attention to two that were fatal and almost precisely similar.

In the first, aged seventeen, for five days after a double excision the condition was good, with no evidence of any complications; then the heart's action became very rapid, and on different parts of the body an extensive eruption occurred resembling urticaria, the wheals being very large, universally crescentic in shape, and raised fully one-half inch above the surface. There was little or no fever until just before death; examination of the wounds showed no inflammatory action, and the parts around them were free from the eruption. There was no pus present, but a large quantity of oily substance or fat exuded when the wounds were reopened. No further examination was allowed.

The second case, aged fifteen, died with exactly similar symptoms, and at the same period after the operation. The strictest aseptic precautions were observed in both these cases.

He concludes: 1. That the danger in these operations is in proportion to the age of the patient, and consequently the degree of fatty degeneration present. 2. That both these deaths were due to fatty emboli or the absorption of some non-septic material into the blood, which caused the fatal heart-complication. 3. That, though the younger cases may be subjected to this procedure with every hope of success, both as to function of the stiffened limb and as to life, the rule does not hold good in the older cases,—say, after ten or twelve years of age.

The Anatomy of Club-Foot. (*Medical Record*, August 18, 1894.) By Frank Hartley, M.D.

The author has had opportunity to dissect two inveterate club-feet, and in the article gives illustrations taken from one of twenty-two years' standing. He found that the shape of the bones of the foot was in almost all instances very much altered from normal, and the relation which the various bones bore to each other was equally strange.

It is also interesting to note the new articular facets found in club-foot. In the club-foot of the new-born child new articular facets (nearthroses) are developed: 1. On the mesial side of the internal malleolus is found an articular facet which articulates with a similar facet upon the mesial and superior surface of the navicular bone. This articulation is entirely separate from the talo-navicular joint, and against its capsule rests the tibialis posticus

tendon as it ascends beneath the navicularis. 2. Between the internal malleolus (its inferior surface) and neck of the talus. 3. Between the malleolus externus and the calcaneus.

In one specimen the nearthroses are more numerous, and are as follows: 1. Between the posterior border of the tibia and the calcaneus. 2. Between the internal malleolus and the navicular. 3. Between the internal malleolus and the cuneiform (internal). 4. Between the external malleolus and the calcaneus. 5. Between the sustentaculum tali and the inferior surface of the navicular bone. 6. Between the navicular bone and the talus at the junction of the body and the neck. 7. Between the postero-internal border of the cuboid and the calcaneus beneath and anterior to the sustentaculum tali.

After birth the muscles tend to maintain or increase an existing deformity. In the adult congenital club-foot, however, there is added another factor in the production and intensification of the deformity,—namely, the weight of the body in walking. These changes, so far as this dissection has shown, consist: 1. In an excessive increase of the deformities found in the bones of the new-born. 2. In additional nearthroses. 3. In an increased plantar flexion at the talo-crural joint. 4. In a marked supination and adduction in the calcaneus. 5. In an extensive displacement of the navicular and cuboid bone in the mesial side of the talus and calcaneus. 6. In a pronounced rotation of the tibia and fibula.

The presence of the abnormal articular facets is the prime cause of the relapses which are so frequent in club-foot and which only mean that the surgeon has not retained the foot in a normal position long enough for nature to establish normal articulations in place of the nearthroses which had been present between the various bones.

NEUROLOGY.

Merycism. (*New York Medical Journal*, July 28, 1894.) By William A. Hammond, M.D.

Human Rumination Regarded in the Light of Atavic Tendency. Report of a New Case, with Results of an Investigation of its Digestive Chemism. (*Medical Review*, August 18, 1894.) By Edward C. Runge, M.D.

E. S., nineteen years old, was treated by Hammond for a peculiar mental condition approaching imbecility, but in which the chief abnormal phenomena were those showing the predominance of certain instinctive tendencies and a lack of moral sentiments rather than a deficient intellectual development. Merycism had been a habit for several years. Every meal was regurgitated in from half an hour to an hour after it had been swal-

lowed, was remasticated, and swallowed again. Liquids alone remained in the stomach, the regurgitated mass being comparatively free from them. The patient could accelerate or retard the action by voluntary effort, but could not altogether prevent it. He described the taste of the regurgitated food as somewhat sweet and agreeably acid, but never similar to that of the ingesta. Preceding regurgitation a sensation like belching of wind was experienced. Then the stomach could be felt to contract, and was generally assisted in the expulsive efforts by the action of the diaphragm and abdominal muscles.

No special treatment was undertaken against the merycism with which the patient suffered; a few days later on he was trephined for his mental condition, a button of bone the size of a dollar being removed from that part of the skull over the superior extremity of the fissure of Rolando on the right side. Regurgitation did not occur with the meals he ate subsequently till on the fifth day, when there was a slight reappearance. Eight days later a similar button from the corresponding part of the left side of the skull was removed. From this time to the present (over nine months) there has been no regurgitation, and there is decided improvement in his mental condition.

Is it probable that trephining would prove curative of merycism in the case of a person not the subject of mental deterioration? The author is inclined to think that it would; and should another instance come under his care he would be disposed to recommend the operation, provided the patient felt sufficiently anxious to be cured to warrant its performance.

A "vomiting centre," if clearly located, might not correspond with a regurgitating centre, should such exist in the human brain. That there is such a centre in ruminant animals is scarcely a matter of doubt. Perhaps there is in the brain of man a centre—the relic of that which was active in a former state of human development—rudimentary, dead, but which, as is seen with other analogues, occasionally, under the influence of favorable conditions, starts into activity.

According to Runge, Mr. D., aged thirty-seven years, had been subject to the ruminating habit for twenty-five years. A weak stomach appears to have been a family heritage, and rapidity of eating his acknowledged fault. As in the preceding case, the grosser parts of the food are selected with remarkable precision, and the taste of the regurgitated mass is not disagreeable, except after eating a heavy meal just before sleeping. His statement that whenever the ruminating act fails him bile is regurgitated into the stomach was verified by testing expressa, obtained from the stomach during absence of rumination, for bile pigments.

After relieving the indigestion, for which he sought aid, he was subjected to a physical examination again, and the stomach was distended with water and with air.

The three following points were proved: 1. The absence of any considerable degree of gastrectasis. 2. The high degree of paresis or insuffi-

ciency of the cardiac sphincter. 3. Some muscular atony of the whole organ.

The degree of motility of the stomach was obtained by Ewald and Sievers's salol test. The absorptive power was tested by Penzoldt's method of giving 0.1 gramme of potassium iodide and timing its appearance in the saliva. The digestive chemism was investigated by analyzing expressa obtained from the stomach one hour after Ewald's test breakfast had been taken.

The chemical analysis showed absence of fermentation, a normal amount of free hydrochloric acid, and the presence of amylolytic action. This proves clearly that the digestive chemism, in any and all of its phases, is not the causal factor of the ruminating habit in the case under consideration.

As the author's attempts have thus far failed in solving the problem, he considers that there is but one thing more to be done, and that is to find how much or how little the process of atavic tendency or reversion to ancestral types may have to do with the establishment of this unusual condition. Eugene Martel, in a contribution to the *Revue Internationale des Sciences médicales* (1886), quoting Blanchard, says, "That the habit of rumination was acquired by certain animals at the time that the carnivora appeared upon the earth. Fearful of attack the ruminants grazed rapidly, ready for flight at the first intimation of danger. Then, having reached a place of safety, their food was regurgitated and masticated thoroughly. A similar condition is obtaining in man, he asserts, in this age of hurry."

The patient was accustomed to abuse his stomach by bolting food, practically unchewed. From being a stimulant it grew to be an irritant. The bolted gross food particles gradually ceased to play the *rôle* of irritating agencies, and became stimulants again, but, instead of inciting the churning movements of the stomach, they called forth propulsive movements that carried the offending agents along the path of least resistance,—namely, through the cardiac opening with its paretic sphincter. It is reasonable to assume that the nerve elements, central as well as local, acquired, *pari passu*, the faculty of responding to these new agencies of stimulation, and thus a complete reflex mechanism had been established. The higher brain centres were at first actively engaged in directing the process of remastication. At last they grew habituated to the changed order of things, and the entire act lost all the features essential to a conscious effort.

"Thus stands before us in bold relief a beautiful illustration of the workings of atavic tendency. Our merycole bears out the biological truism that similar conditions are ever productive of similar effects, and that every living organism possesses the inherent power of adaptation."

A. W. P.

DISEASES OF THE LARYNX, NOSE, AND SURROUNDING STRUCTURES.

IN CHARGE OF J. PAYSON CLARK, M.D.,

Physician for Diseases of the Throat, Massachusetts General Hospital; Physician to the Throat Department, Boston Dispensary.

Severe Epistaxis. (*Revue de Laryngol., d'Otol., etc.*, June 1, 1894.) By C. Miot, M.D.

The writer reports three cases, one of a very severe recurrent epistaxis, the others of less importance, in which he effected a cure by means of electrolysis. His conclusions are: 1. In all cases where the epistaxis occurs from an erectile or varicose tissue of a certain dimension, positive interstitial electrolysis is the best method of treatment. It can also be used to cure hemorrhagic points much more limited. 2. The material of the needles is of little importance. Those of silver or copper are probably best. 3. The intensity of the current should be about sixteen to twenty milliampères and the duration eight to ten minutes. 4. Three or four sittings in exceptional cases, one or two in others, are sufficient.

Deformities of the Septal Cartilage. (*Boston Medical and Surgical Journal*, August 16, 1894.) By A. Coolidge, Jr., M.D.

For convenience the writer divides these deformities into four varieties: 1, where the cartilage is simply bowed; 2, where it is fractured, forming a sharp bend or angle; 3, where there is a spur or ridge projecting from the surface; 4, where it has been dislocated from one of its bony attachments and united in a new position. More than one of these conditions may be found in the same case. In one hundred cases at a hospital clinic, taken at random, a well-marked ridge in one or both nostrils was found along the cartilage-vomer synchondrosis in fifty-eight; along the cartilage-ethmoid in fifty-one. A noticeable bend occurred in forty. In six there had been a dislocation of the cartilage from the vomer, and in four an old fracture of the cartilage. To retain a bent cartilage in position its resiliency must be first destroyed. In operating asepsis is important. It is advisable to save as much mucous membrane as possible, and to leave the surface of the wound as smooth as possible.

An operation is preferable, where possible, that requires neither splint nor packing. If a septum is bent and at the same time thickened on its convex side, the writer thinks it is often a mistake to remove the thickening, which is apparently a provision of nature to strengthen a weak point. The bowing of the cartilage is often much increased by such an operation.

Contribution to the Study of Primary Cancer of the Trachea. (*Revue de Laryngol., d'Otol., etc.*, June 15, 1894.) By M. Pogrebinsky, M.D.

The writer reviews the cases of this affection which have been reported,—

twelve in all. But the primary character of three was doubtful, thus leaving only nine. Patients are more frequently men than women. The duration of the disease is about two years. The age of the patients was from thirty-three to sixty-two. The symptoms were simply those of narrowing and ulceration of the trachea, with no typical characteristics for a differential diagnosis. In the majority of reported cases the diagnosis was not made during life. Only exceptional cases presented conditions favorable for a tracheoscopic examination. In the writer's case the disease was complicated by frequent attacks of perichondritis in the larynx, which made the diagnosis more obscure. Strictures of the trachea are more often syphilitic than cancerous. In syphilitic tracheitis there are generally evidences of ulceration first followed by a cicatricial contraction, whereas, in cancer the tumor causes increasing dyspnœa, and later, when ulceration occurs, there is expectoration. The question of differential diagnosis of primary cancer of the trachea still remains an open one.

Lactic Acid in Chronic Laryngitis. (*Revue de Laryngol., d'Otol., etc.*, June 1, 1894.) By Massei, M.D.

The writer has obtained excellent results in tuberous inflammation of the cords by the use of a two-per-cent. lactic acid spray six or eight times daily.

The Structure and Histological Position of the so-called Fibromata of the Vocal Cords. (*Revue de Laryngol., d'Otol., etc.*, June 15, 1894.) By O. Chiari, M.D.

From a histological examination of thirty-eight small tumors of the vocal cords the writer concludes that these growths should be regarded as circumscribed hypertrophies of the superficial parts of the cord, not as fibromata. They are generally situated towards the middle of the free border of the vocal cord and vary in size up to that of a small bean. They are covered with stratified pavement epithelium and are made up of a fibrous connective tissue, at times compact but generally loose, containing cavities with or without an endothelial lining, empty or containing blood, clots, or fine granular material. The vessels are generally numerous. It would be more exact, therefore, to designate these growths as polypi.

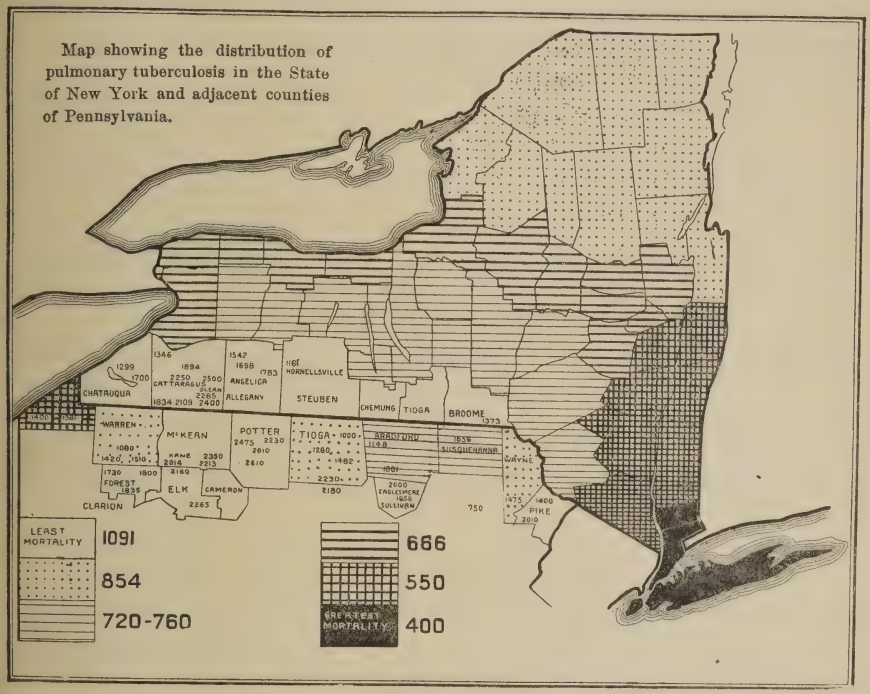
CLIMATOLOGY.

IN CHARGE OF GUY HINSDALE, M.D.,
Lecturer on Climatology in the University of Pennsylvania, Philadelphia.

The Comparative Rarity of Pulmonary Tuberculosis in the Highlands of Pennsylvania and the Adjacent Counties of New York. (*Medical News*, August 4, 1894.) By Guy Hinsdale, M.D.

The author calls attention to the fact that the southern tier of counties

in New York, from Chautauqua County to Broome County inclusive, have a mortality from phthisis lower than that of any other portion of the State of New York. In these seven counties there was in 1893 one death from phthisis in every 1091 of population; in the Adirondack and northern-



The small numerals in the map indicate the altitude; the large figures below, the average number of persons living to each annual death from pulmonary tuberculosis. (Slightly changed and reduced one-half from the original.)

district, one death in 854; in the central counties, one death in 720 to 760; in the Mohawk Valley, one in 666; in the Hudson River district, one in 550; while in New York City and the maritime district, one in 400.

The highlands of Pennsylvania, including the counties of McKean, Potter, Forest, Clarion, Elk, Cameron, Union, Sullivan, and Pike, are somewhat wilder, the forests are more extensive, the general elevation greater, varying from fifteen hundred to over two thousand feet. This region is a little cooler, a little dryer, a little more primitive. Vast areas of hemlock, and here and there growths of pine cover the mountain tops, while there are many ridges covered with beech, birch, and maple. The summer and autumn climate is cool and bracing. The winter sets in about November 1, and snow is on the ground for nearly four months, without the frequent alternations of thawing and freezing so common near the seaboard. Reports from McKean County show that pleurisy and pneumonia are uncommon, diphtheria very rare, and that cases of pulmonary tuberculosis have usually been greatly benefited, and in some cases entirely cured, by a residence in this region. Kane, in the southwestern corner of McKean County, has already acquired some reputation as a desirable summer resort. It is

eminently suited for cases of tuberculosis and hay fever, and is provided with good accommodations.

The writer urges the establishment of a sanitarium for consumptives in this locality, either by the State or by private philanthropy, and firmly believes that all the good that has been accomplished at the Adirondack Cottage Sanitarium may be repeated in Pennsylvania, and many lives be saved to the commonwealth.

PATHOLOGY.

IN CHARGE OF ALLEN J. SMITH, A.M., M.D.,
Professor of Pathology in the Medical Department of the University of Texas, Galveston, Texas.
AND
HENRY W. CATTELL, A.M., M.D.,
Demonstrator of Morbid Anatomy in the University of Pennsylvania; Prosector to the American Anthropometric Society; and Pathologist to the Presbyterian Hospital, the Institution for Feeble-Minded Children at Elwyn, etc.

The Bacillus of Plague. (*Lancet*, August 18, 1894.) Report by G. Simes Woodhead, M.D., for Mr. Ernest Hart, and by Duclaux, for Dr. Versin.

The specimens submitted to Dr. Woodhead for examination were microscopic preparations of the softened material taken from the liver and spleen of a mouse that had been injected with the blood from the centre of a femoral bubo. The organisms appear almost like diplococci enclosed in a delicate capsule, or as a short bacillus with the ends somewhat rounded: there is a clear band or space in the centre, but the predominant form is distinctly an encapsulated diplococcus or short bacillus. The size varies very considerably according to the staining method employed, the organism appearing rather smaller in the watery gentian violet solution—stained by Dr. Cantlie, who sent the specimen—than in the alcoholic glycerin fuchsin solution, stained by Woodhead. In the preparation made from the splenic pulp, there is almost a pure culture of the bacillus; the few cells scattered throughout the preparation take on a somewhat deep stain and are apparently somewhat swollen, though this may be due to the method of preparation. On account of the fact that the size of the capsule and its staining capacity may vary considerably, it is quite possible that this appearance of a capsule is like that which is sometimes met with around the anthrax bacillus stained in special solutions, or that it may be simply a retraction of the albumen from the constricted bacillus, due to the drying and other processes of preparation. An organism, whether the characteristic one or not, shows distinct leptothrix filaments which have probably gone on growing after the time of death.

Versin also claims to have isolated in the tissues of plague-stricken patients a small bacillus, difficult to stain by the usual reagents, but easy to cultivate on gelatine. The micro-organism is particularly abundant in the inguinal glands, the enlargement of which is the characteristic lesion of the

disease. The bacillus is easily inoculable in rats (the mortality among these rodents has been remarkable during the epidemic), mice, and guinea-pigs; all these animals die quickly after inoculation.

Kitasato (*Journ. Amer. Med. Assoc.*, August 18, 1894) also describes a bacillus discovered by himself in the blood of persons affected with the plague.

A Method of Making a Permanent Dry Preparation of the Brain. (*Liverpool Medico-Chirurgical Journal*, July, 1894.) By Alfred W. Campbell, M.D., of Rainhill, England.

Campbell recommends as a substitute for Giacomini's method that the brain be treated as if the specimen was being prepared for section on the Cambridge rocking microtome. The method is as follows:

1. As soon as possible after removal from the cranial cavity, the brain is stripped of its membranes and placed in a saturated solution of perchloride of mercury (seven and a half per cent.), care being taken to avoid distortion of its configuration. In this solution it is allowed to remain for forty-eight hours, at the end of which time its shape will be fixed. 2. Wash in water and then harden in methylated spirit for from three to five weeks. (It is better that the spirit be changed two or three times during this period.) 3. When quite firm, immerse in oil of turpentine and place for three days in an incubator heated up to 45° C. 4. Change into melted Cambridge soft paraffin, and allow to remain in the incubator just above the melting-point of the paraffin for from four to five days. 5. Extract, cool in water, clean away all the paraffin from the surface and sulci of the preparation, and finally apply a thick coat of spirit varnish. 6. The brain can then be freely handled, and may further be painted with the usual mixture of oils, colors, turpentine, and gold size.

Experimental Researches upon the Influence of Laparotomy in Tuberculous Peritonitis. (*Archives de médecine experimentale et d'anatomie pathologique*, September 1, 1894.) By Dr. N. Stchégoleff.

From careful experiments performed upon dogs, the author concludes that tuberculous peritonitis is capable of being cured by laparotomy, provided the operation be made at the beginning of the trouble. If it be made late in the disease, a cure can no longer be secured, though life may often be prolonged. It is thought that the curative action of a laparotomy is due to the following combination of physical causes: The traumatism that takes place to the peritoneum during the operation; thermic influence; penetration of air into the abdominal cavity, and perhaps the action of light. A combination of these phenomena causes an irritation of the peritoneum, and this reaction is followed by an inflammatory deposit, more or less intense, which is indispensable for the arrest of the morbid process.

The inflammatory reaction is characterized by an infiltration of embryonic cells, phagocytosis, and an active development of the endothelial cells. This new tissue organizes, and the specific elements of tuberculosis perish or are absorbed. That evacuation of liquid is not necessarily the cause of the

cure is shown by those cases which get well after laparotomy in which no liquid was found at the time of the operation. The author thinks that dogs are more susceptible to tuberculosis than is usually thought.

Study of an Outbreak of Avian Diphtheria in Tunis. (*Annales de l'Institut Pasteur*, August 25, 1894.) By Dr. A. Loiv and Mr. E. Ducloux, of Tunis.

For the last few years the ravages of this disease in Tunis have been considerable, as is shown by the fact that the price of poultry has risen sevenfold. The bacillus is positively different from the classical Klebs-Loeffler bacillus found in human diphtheria, and is easily cultivable on the ordinary media, giving a characteristic and very abundant growth upon potato. The bacillus is both aerobic and anaerobic, and is not stained by Gram's method. It was found that if the bacillus was heated for one-half hour, the material so produced could be inoculated into chickens, turkeys, geese, etc., with the result that they were rendered immune from the ravages of the disease, even though they were placed on a farm which was badly affected with the disease. Chickens attacked with the disease and surviving have an immunity from a second attack. [This would be a favorable opportunity to try the effect of serum inoculation.] Rabbits can be inoculated, but guinea-pigs and bovines are not capable of taking the disease.

The authors describe the same bacillus which they found in poultry as occurring once in a child, aged seven, living on an infected farm where the chickens were being decimated by the disease. The patient had a false membrane in the throat which was neither very thick nor adherent.

MISCELLANEOUS.

Unsolved Riddles of Science. (The presidential address delivered before the British Association for the Advancement of Science, at Oxford, August 8, 1894. *The Lancet*, August 11, 1894.) By the Marquis of Salisbury, K.G., D.C.L., F.R.S., Chancellor of the University of Oxford.

"We live," said this distinguished *savant* and statesman, "on a small, bright oasis of knowledge surrounded on all sides by a vast, unexplored region of impenetrable mystery. From age to age the strenuous labor of successive generations wins a small strip from the desert and pushes forward the boundary of knowledge."

Three of the most important physical questions which it has been the effort of the last century to solve, and the answers to which have not yet been obtained, were discussed,—

1. The conviction is irresistible that the existence of our sixty-five elements is a strange anomaly, and conceals some much simpler state of facts. The successive triumphs of research of Dalton, Stas, Kirchhoff, and Mendeléeff, greatly as they have added to our store of knowledge, have gone but little way to solve the problem which the elementary atoms have for

Name of Prize.	Amount in Francs.	Subject.	
		1895.	1896.
Falbet	900[2]	Not to be awarded this year.	Morphinism and morphinomania.
Vulfranc-Gerdy	1,500	These prizes are competitive and secure an opportunity to study at various watering places after competition.	Not mentioned.
Godard	1,000[1]	Some surgical subject.	Same as 1895.
Hugo	1,000[4]	Not to be awarded this year.	Some work on the history of medicine.
Huguier	3,000[3]	Gynæcology, especially the surgical treatment of.	Not to be awarded this year.
Hygiène de l'Enfance	1,000[1]	Care of the skin in early infancy.	Not mentioned.
Laborie	5,000[1]	For notable advancement in surgery.	Same as 1895.
Laval	1,000[1]	For the most meritorious student.	Same as 1895.
Laënnec	1,000	Capillary bronchitis in babes consecutive to simple bronchitis.	Not mentioned.
Lefèvre	1,800[3]	Not to be awarded this year.	Melancholia.
Louis	4,000[3]	Comparative study of the therapeutic action of the iodides.	Not to be awarded this year.
Mège	900[3]	Pathology of myocarditis.	Not to be awarded this year.
Meynot	2,600[1]	Best work on ophthalmology.	Same as 1895.
Monbinne	1,500	For the support of scientific work.	Same as 1895.
Nativelle	300[1]	For the separation of or report on a crystalline active principle of a medicinal substance not yet isolated.	Same as 1895.
Oulmont	1,000[1]	To the student receiving the gold medal in medicine.	Same, but in surgery.
Perron	3,800[4]	Most useful subject in advancement of medicine.	Not to be awarded this year.

[1] Annual. [2] Biennial. [3] Triennial. [4] Quinquennial.

Name of Prize.	Amount in Francs.	Subject.	
		1895.	1896.
Portal	600[1]	Morbid anatomy of tumors of the parotid gland.	Pathological anatomy of the lymphatic system in malignant tumors.
Pourat.....	1,200[1]	Experimental determination of the method of contraction and innervation of the lymphatic vessels.	Thermogenic action in respiratory exchange.
Ricord.....	600[2]	For the best work upon venereal diseases appearing in the two succeeding years.	Not to be awarded this year.
Saintour.....	4,400[2]	Not to be awarded this year.	Any subject.
Saint-Paul.....	25,000	To be given to the first person discovering a remedy which is efficacious and all-powerful in diphtheria.	Interest on this sum to be awarded to most meritorious research on diphtheria.
Stanski.....	1,800[2]	Not to be awarded this year.	The existence or non-existence of miasmatic contagion by infection or contagion at a distance.
Vernois	700	Best work on hygiene.	Same as 1895.

[1] Annual. [2] Biennial.

H. W. C.

BOOK REVIEWS.

AN ILLUSTRATED DICTIONARY OF MEDICINE, BIOLOGY, AND ALLIED SCIENCES, INCLUDING THE PRONUNCIATION, ACCENTUATION, DERIVATION, AND DEFINITION OF THE TERMS USED IN MEDICINE, ANATOMY, SURGERY, OBSTETRICS, GYNECOLOGY, THERAPEUTICS, MATERIA MEDICA, PATHOLOGY, DERMATOLOGY, PEDIATRICS, OPHTHALMOLOGY, OTOLOGY, LARYNGOLOGY, PHYSIOLOGY, NEUROLOGY, HISTOLOGY, TOXICOLOGY, DIETETICS, LEGAL MEDICINE, PSYCHOLOGY, CLIMATOLOGY, ETC., ETC., AND THE VARIOUS SCIENCES CLOSELY RELATED TO MEDICINE: BACTERIOLOGY, PARASITOLOGY, MICROSCOPY, BOTANY, ZOÖLOGY, DENTISTRY, PHARMACY, CHEMISTRY, HYGIENE, ELECTRICITY, VETERINARY MEDICINE, ETC. By George M. Gould, A.M., M.D., Author of "The Student's Medical Dictionary," "12,000 Medical Words Pronounced and Defined," "The Meaning and the Method of Life;" Editor of "The Medical News;" President, 1893–1894, American Academy of Medicine; one of the Ophthalmologists of the Philadelphia Hospital. Based upon Recent Scientific Literature. Philadelphia: P. Blakiston, Son & Co., 1012 Walnut Street, 1894. Square 8vo, pp. 1633.

This large and handsome volume is well printed, with clear and not too small type, on good paper, and, as would be expected from its author's already high reputation as a medical lexicographer, is undoubtedly a work of great value, and is, we believe, destined to be one of the popular medical dictionaries of the future. It contains a great many words which have appeared in the literature of the profession during recent years, and which have not a place in the older vocabularies, and these are, as a rule, correctly and clearly defined; special care seems to have been taken to include all terms embracing a reference to an individual,—such as Jacob's ulcer and Purkinge-Sanson's images,—and students, who, probably because they can never remember these terms, seem to be particularly fascinated by them, will here find a mine of proper-name terminology which will surpass their largest expectations or even hopes. Many valuable tables also are given, as of poisons and their antidotes, reflexes and their significance, etc., which will cause the work to be consulted, not merely as a dictionary, but as a convenient hand-book in many branches of medicine.

Thus far we have been able to commend the work under review with a clear conscience; but candor compels us to add that there are some points in which we think it worthy of grave animadversion. We do not refer to the peculiarities of spelling which the author is known to advocate, and which we suspect will, though they may attract attention for a time, ultimately become as obsolete as is the Websterian spelling, now abandoned even in the modern editions of Webster's dictionaries; but to matters of deeper importance. The greatest fault of the work is, we think, the brutal plainness, to use no harsher term, with which certain words are defined and certain acts described, which, if referred to at all, might well have been dismissed with the briefest mention, even veiled in a foreign language, and not have been elaborately set forth in the vernacular. Indeed, it was a good rule with the older lexicographers, as with other writers on serious topics, that necessary references to these matters should be concealed in a dead language; and this rule, which is measurably observed even in that most "scatologic" of scientific books, the *Psycho-*

pathia Sexualis of Krafft-Ebing, might well, we think, have been observed in the present instance.

Lesser faults, but still faults in a work of this character, are the occasional falling into error, obviously through an attempt to do too much; and the not infrequent evidences of imperfect scholarship, both in the directions for pronunciation and in the derivations. As an illustration of the first-mentioned defect, we may refer to the definition given of "Burking," which is said to be the method of killing "employed by Burke and Williams." It is questionable whether "burking" is, properly speaking, a medical word, and whether it was necessary to introduce it into a medical dictionary; but, having been introduced, the information given about it should be accurate. We do not mean to deny that among the thousands of murderers, hung and unhung, who have disgraced humanity during the present century, there may not have been one named Williams; but Burke's instructor and partner in the famous West-Port murders was not Williams, but William Hare.

Of course, pronunciation may be said to be a matter of taste, and it is one of the privileges of a free and independent American citizen to pronounce any word in any way that he likes; but we doubt if any well-educated Frenchman would pronounce the word *liqueur* as the reader of this dictionary is told to pronounce it, "likāre;" and when *phthisis* is pronounced as usual, as if it began with the letter "t," we fail to see why *lithophthisis* should be distorted into "lith-off-this-is."

As an illustration of incorrect derivation we may instance the word "spend," which we do not think is a medical word, and which is introduced here with a very vulgar meaning, and is said to be derived from a Latin source, "*spendere*, to spend." But there is no word *spendere*, in Classical Latin at least, the Roman term for "to spend" being *expendere*, to "weigh out;" the Greek word, σπενδω, from which the term in question, in its vulgar sense, is probably derived, means not to "spend," but to "pour out," as a drink-offering or libation. Again, the word "polygonal" is said to be derived from πολύς, many, and γονία, angle; but there is no word γονία in Greek, the term for "angle" being γωνία; "polygonate," which follows immediately below "polygonal," is properly said to be derived from πολύς and γόνυ, knee. "Polygonia," meaning "great fecundity," which is said to be derived from πολύς and γόνος, might better have been taken directly from πολυγονία, a word used by both Plato and Aristotle.

In view of the author's position as ophthalmologist to a large hospital, we are somewhat surprised that he favors the meaning of "day-blindness," formerly attributed to the word *nyctalopia;* we had thought that since the publication of the interesting researches of Dr. Greenhill and Professor Tweedy, it was conceded that "night-blindness" was the proper signification of this word, the Greek νυκτάλωψ (from νύξ ἀλαός ὤψ) meaning one who cannot see at night, literally "night-blind eye."

Though we have thought it only right and just to make the above criticisms, we take pleasure in repeating that the work, as a whole, is, in our judgment, one of much value, and one which we doubt not will command a large sale.

Braithwaite's Retrospect. The Retrospect of Practical Medicine and Surgery, being a half-yearly journal containing a retrospective view of every discovery and practical improvement in the medical sciences. Edited by James Braithwaite, M.D., London; Obstetric Physician to the Leeds General Infirmary; Late Lecturer on Diseases of Women and Children, Leeds School of Medicine; Fellow and Late Vice-President of the Obstetrical Society of London; Corresponding Fellow of the Gynæcological Society of Boston, U. S. (Uniform American Edition) 325 pages, price $2.50 a year. New York: G. P. Putnam's Sons, 1894.

At the present time, when so much original work is being done in the laboratories and clinic-rooms of the world, the busy practitioner often finds himself unable to follow out the results of the vast amount of original work too often published in

elaborated articles or in a foreign tongue, and feels the need of some publication which will give him in a condensed form the conclusions of the investigators. This need is supplied, and has been supplied for many years, by "The Retropect." The present number gives in a series of admirable abstracts, much in the author's own words, many of the important papers that have appeared in the various medical magazines for the past six months. J. M. S.

CHEMISTRY: GENERAL, MEDICAL, AND PHARMACEUTICAL, INCLUDING THE CHEMISTRY OF THE U. S. PHARMACOPŒIA. A MANUAL OF THE GENERAL PRINCIPLES OF THE SCIENCE, AND THEIR APPLICATIONS IN MEDICINE AND PHARMACY. By John Attfield, F.R.S. Fourteenth Edition. Philadelphia: Lea Brothers & Co., 1894.

The physician and pharmacist will find the great majority of questions arising in chemistry answered by reference to this work of 794 pages. The print is excellent, though too fine for night work. This, the fourteenth edition, is adapted to the Pharmacopœia of the United States, while the concurrent production of the fifteenth edition is revised according to the British Pharmacopœia.

H. W. C.

ZUR KENTNISS DER SOGENANNTEN BOTHRIOCEPHALUS ANÄMIE (Bothriocephalus Anæmia). By Ossian Schaumann, 1894.

This most interesting and complete monograph is based upon seventy-two cases which have been accurately and minutely studied. The results are as follows:

1. The specific gravity of the blood is considerably diminished. 2. The number of red blood-cells is enormously reduced, sinking as low as that found in the most extreme anæmias. These cells vary in size, some larger and some smaller than normal, but the average of all measurements is about normal. Their form is oftentimes considerably altered. Their color varies, at times paler, and in the same field are seen cells more deeply pigmented than normal. Quite regularly the large and normal-sized red blood-cells were nucleated. The tendency to rouleaux was diminished, and, in certain cases, disappeared. 3. The percentage of hæmoglobin is diminished. The hæmoglobin value of each red blood-cell is slightly above normal. 4. The number of white blood-cells was diminished in certain of the cases, and but rarely was leucocytosis observed. 5. The number of blood-plaques was less than normal.

The clinical and pathological picture of this disease is almost a perfect counterpart of that of pernicious anæmia, the only satisfactory differential diagnostic point being the presence of the bothriocephalus latus in the intestinal discharges.

Schaumann states that this form of anæmia may also be mistaken for chlorosis, latent carcinoma, endocarditis, meningitis, abdominal typhus, catarrhal jaundice, and catarrhal gastro-enteritis. Regarding the prognosis, (*a*) it is good when the number of red blood-cells is more than 1,000,000; (*b*) it is worse when the number of red blood-cells is less than 1,000,000; (*c*) it is bad, although not absolutely unfavorable, when the number reaches 500,000; (*d*) complications render it grave, and (*e*) the average mortality in the seventy-two cases was twelve per cent.

This author recommends the use of filix mas, in doses of two to four grammes, one-half drachm to one drachm. Of seven thousand and eight cases that applied for treatment in ten years, one-tenth per cent. suffered from bothriocephalus anæmia. The author states that the symptoms are caused by a chemical poison produced by the intestinal parasite, which acts directly upon the blood. Schaumann believes that the poison acts directly upon the blood-cells and not upon the blood-making organs, and is, therefore, a hæmolytic process.

J. D.

NOTICE.

MEETING OF MEDICAL PUBLISHERS.

The first meeting of the American Medical Publishers' Association took place at Hot Springs, Va., on August 13, 1894. After the transaction of the usual routine business, the president, Dr. Landon B. Edwards, read a paper on "Advertising and Advertising Agencies." Thirteen applications for membership were presented and acted upon favorably. Upon motion, it was decided that hereafter the annual meetings should be held just prior to the sessions of the American Medical Association, the next meeting being set for Monday, June 5, 1895, 9 A.M., in the Eutaw House, Baltimore, Maryland.

NOTE TO CONTRIBUTORS.

Accepted manuscripts will be liberally compensated for, immediately upon publication; or reprints, if stated on the manuscript, will be furnished in lieu of such compensation. It is distinctly understood that all articles appearing as original matter are for our exclusive use, and are not to appear in any other publication excepting the Transactions of the society before which the paper may have been read. Illustrated articles are especially desired.

All matters of business, as well as subscriptions, should be sent to the International Medical Magazine Company, 716 Filbert Street, Philadelphia.

Manuscripts, exchanges, and books for review should be addressed to the Editorial Office, 3709 Spruce Street, Philadelphia.

centuries presented to mankind. We do not know what the atom of each element is, whether it is a movement, or a thing, or a vortex, or a point having inertia; whether there is any limit to its divisibility, and, if so, how that limit is imposed. We cannot conceive, on any possible doctrine of cosmogony, how the sixty-five elements known to the chemist came into existence.

2. The half-discovered entity of ether, which alone can explain undulation, and which must pervade all space, whether empty or full, whether occupied by opaque matter or transparent matter, or by no matter at all. The discovery of Maxwell, that light and the electric impulse move approximately at the same rate through space, would show this.

3. What is life,—animal and vegetable life,—the action of an unknown force on ordinary matter? Biology gives at present no hope of penetrating the great central mystery.

After discussing the recent controversy on the doctrine of natural selection, by Weismann and Romanes, the writer quotes in conclusion the words which Lord Kelvin used in closing his address from the same chair more than twenty years ago.

"I have always felt," said Lord Kelvin, "that the hypothesis of natural selection does not contain the true theory of evolution, if evolution there has been in biology. . . . I feel profoundly convinced that the argument of design has been greatly too much lost sight of in recent zoological speculations. Overpoweringly strong proofs of intelligent and benevolent design lie around us, and if ever perplexities, whether metaphysical or scientific, turn us away from them for a time they come back upon us with irresistible force, showing to us through nature the influence of a free will, and teaching us that all living things depend on one everlasting Creator and Ruler."

H. W. C.

Prizes to be Awarded by the French Academy of Medicine during the Years 1895 and 1896. (*Gazette des Hôpitaux*, December 14, 1893.) Report by the Secretary, Mr. Cadet de Gassicourt.

All of the following prizes, with the exception of those of Buignet and Huguier, are open to competition by non-residents of France, though the articles must be written either in the French or in the Latin language. Essays, books, instruments, pictures, etc., must be received before the end of February of the year in which the prize is to be awarded, and are not returned to the author. Any one receiving a prize has a right to the title of *Lauréat de L'Académie de Médecine*. In many cases a prize is not awarded to one person, but the amount is divided among several competitors. The usual rules governing prizes are to be observed. Those intending to compete for any of the prizes should address the Secretary, 49 Rue des Saint-Pères, Paris, for further information in regard to them. The list is interesting, both on account of the great number of prizes offered and for the subjects chosen for competition.

NAME, AMOUNT, AND SUBJECT-MATTER OF THE PRIZES TO BE AWARDED BY THE FRENCH ACADEMY DURING 1895 AND 1896.

Name of Prize.	Amount in Francs.	Subject.	
		1895.	1896.
Academy.....	1,000[1]	Circulatory phenomena in the light of thermic and chemical changes induced by the contraction of the striated muscles.	Heredity and contagion in the propagation of tuberculosis.
Alvarenga	800[1]	On any unpublished work pertaining to medicine.	Same as 1895.
Amussat.....	1,000[2]	Not to be awarded this year.	The most important point bearing upon surgical therapeutics based on anatomy and experimentation.
Baillarger.....	2,000[2]	Not to be awarded this year.	Best work upon the therapeutics of mental disease and the organization of public or private asylums for the insane.
Barbier.....	2,000[1]	Specific (or best) treatment of incurable diseases, such as rabies, cancer, epilepsy, scrofula, typhus, cholera morbus, etc.	Same as 1895. 2,500 francs this year.
Boullard.....	1,200[2]	Not to be awarded this year.	The best work upon and best results in the treatment of mental diseases.
Bourceret.....	800[1]	Circulation of the blood.	Same as 1895.
Buignet.....	1,500[1]	Best application of physics or chemistry to medical sciences.	Same as 1894.
Buisson.....	10,500[3]	For the most important discovery in the cure of a disease known to be at the present time incurable.	Not to be awarded this year.
Capuron	1,200[1]	Some obstetrical subject.	The influences of lung-disease in the mother as affecting the health of the fœtus.
Chevillon.....	1,500[1]	Treatment of cancer.	Same subject as 1895.
Civrieux.....	800[1]	Obsession in mental disease.	Hallucination in mental disease.
Daudet.....	1,000[1]	Myxœdema.	Non-diphtheritic sore throat.
Desportes.....	1,300[1]	Best work on some practical therapeutical subject.	Same subject as 1895.

[1] Annual. [2] Biennial. [3] Triennial.



FIG. 1.—Œsophago-malacia, showing a large perforated peptic ulcer.



FIG. 2.—Œsophagus and stomach of case of œsophago-malacia.

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ORIGINAL COMMUNICATIONS.

PEPTIC ULCERATION OF THE ŒSOPHAGUS, WITH PERFORATION DURING LIFE.[1]

BY JOHN GUITÉRAS, M.D.,

Professor of General Pathology and Morbid Anatomy in the University of Pennsylvania, and Pathologist to the University Hospital.

THE clinical history is kindly furnished by Dr. Charles S. Potts, physician in the Dispensary for Nervous Diseases in the University Hospital.

Mary S., aged forty-four, a native of England, single, by occupation a weaver, was admitted to the University Hospital June 28, 1892, and died July 22 of the same year.

Family history, negative. The present illness commenced nine years ago, immediately after the death of her mother. She had then an attack of "nervous prostration," and was confined to her bed for two months. She regained strength gradually, but has been more or less neurasthenic since. Two years later she began to experience a feeling of constriction in the throat, and difficulty in swallowing at times, especially liquids. Eighteen months ago, while eating her dinner she suddenly felt "as if something were blocking up the tube." For a week she was unable to swallow anything, all food being immediately regurgitated. About this time she was seen at the Medical Dispensary of the University Hospital by Dr. M. H. Fussell, who informed us that he passed a large-sized bougie without detecting any stricture. This procedure so benefited her that her power of swallowing returned, and she was not seen again for over a month. The

[1] Read before the Philadelphia Pathological Society, April 12, 1894.

symptoms now returned. Bougies were again passed, at intervals, without difficulty for a period of five months. She was at this time regarded as perfectly well, and ceased her visits.

The present attack began seven weeks before admission to the hospital, and after ten months of fairly good health. The onset was sudden, while eating supper at the house of a friend. She claimed to have swallowed nothing during the seven weeks preceding admission. She was fed by the rectum.

On admission the patient was found to be somewhat emaciated. The temperature was 97.1° F. The pulse 60. She complained of no pain, and claimed to have swallowed nothing. A fair-sized bougie was passed without any difficulty, but caused her to vomit some curdled milk, showing that she had swallowed some that had been given her. After this she took two ounces of milk every two hours for a period of two days. On the second day she took, in addition, some milk toast and a soft-boiled egg. On the third day, June 31, she complained of a dull pain between the scapulæ, and was unable to swallow. For three days she took food by the mouth only at long intervals. It was noticed that there was more difficulty in swallowing in the presence of visitors, especially of Dr. Potts and the resident physician. On these occasions she frequently vomited curdled milk. At the end of this period of three days hot cloths were applied over the spine in the dorsal region. After their removal she swallowed perfectly well until the next day. She then requested to have a bougie passed, which was done. She now took liquid and semisolid food for a period of three days. At the end of this time she again relapsed into her old condition, continuing so for several days. Some remarks were now made in her hearing about the wonders achieved by electricity, and a rapidly interrupted current was applied, one pole on each side of the neck. After this she ate perfectly well a dinner consisting of chicken broth, boiled rice, potatoes, and milk. From this time, July 12, until her death, on July 22, she took liquid nourishment without much trouble. In spite of this she seemed to be failing. Her pulse and respiration increased in frequency. There was no rise of temperature until the 20th, when it reached 100° F. It varied between this and normal until just before death, when the temperature rose to 101.2°.

It is worthy of remark, observes Dr. Potts, that during the time the patient was under observation she had no pain, with the exception of the dull pain above mentioned. Also that she never vomited blood, not even after the passage of a bougie, which was done altogether five times, and always with distinct benefit. Another point of interest is that she frequently vomited, after the food had reached the stomach, especially if the doctor or resident physician happened to enter the ward immediately after the patient had taken nourishment. It appears, then, that the food was vomited oftener than it was merely regurgitated from inability to pass through the œsophagus.

Post-mortem Examination.—Body of an emaciated white woman. Rigor mortis moderate. Cadaveric lividity very slight.

General Description of Abdomen.—Adipose tissue of the walls normal in color, and, relatively speaking, not much reduced. The lower ribs are very oblique. The chest is long, and there is a marked constriction of the waist. Diaphragm rises to the fourth space on the left side and the fourth rib on the right. The stomach is long, and presents a decided bend. It extends downward to one and a half inches below the umbilicus, and turns abruptly upward to the pyloric orifice. The head of the pancreas appears rather prominently above the lesser curvature, close to the pylorus. The liver projects three inches in the median line, and is visible two and a half inches to the left of it.

Thorax.—The lungs are free from adhesions anteriorly. The right lung is adherent to the pericardium.

Pericardial sac normal.

Heart.—The left cavities contain a large amount of fluid blood which is dark, and chicken-fat clots extend into the aorta. The mitral orifice admits two fingers. The right auricle is distended by chicken-fat clots extending into the venæ cavæ. The heart is rather small and flabby, weighing one hundred and fifty grammes. The muscular structure is pale and evidently fatty. The visceral pericardium presents a considerable amount of fat. The endocardium of the left ventricle is somewhat opaque. The mitral leaflets are slightly thickened towards the borders. The aortic valves are normal, and the aorta presents a few small patches of atheroma. Endocardium and valves of the right heart are normal.

Left lung laterally and posteriorly presents a few old adhesions. The anterior border of the upper lobe shows some emphysema. The lung is otherwise healthy.

Right Lung.—The pleura presents several patches of recent inflammation. With the exception of the apex and the lower zone of the inferior lobe, the whole lung presents the lesions of acute croupous pneumonia. This process has extended from above downward. The upper portion of the area is in the stage of gray hepatization, the lower portion, in the stage of engorgement.

The posterior mediastinal surface of the right lung, where it is in contact with the œsophagus, contributes to the formation of a small cavity in the mediastinum. This cavity runs from above downward, and contains a grumous fluid.

Abdominal Cavity.—The spleen is small, somewhat firm, and shows a relative excess of the connective tissue and prominence of the Malpighian follicles. Weight, forty grammes.

The *suprarenal bodies* present a high degree of pigmentation.

The *left kidney* is small and of normal consistency. The capsule is easily removed. The cortex presents a pale-yellowish color. Weight, one hundred and eighty grammes.

The *right kidney* shows similar conditions. It weighs one hundred and thirty grammes.

The *pelvic organs* present nothing abnormal, except two small uterine fibroids, one interstitial and the other subperitoneal.

The *stomach* is very much distended, and the walls are generally thin and pale. There is a slight thickening of the pyloric orifice, and there are a few punctiform hemorrhages of the mucous membrane at the orifice.

The *duodenum* and *bile-duct* are normal.

The *pancreas* weighs forty grammes. It does not appear reduced in size, and the structure is normal.

The *liver* is adherent in several places to the diaphragm. The anterior border shows extensive pressure atrophy. The consistency of the organ is normal, the color grayish-yellow. The organ is fatty, and weighs one thousand and forty grammes.

The Intestines.—The greater portion of the ileum is much contracted. The contents resemble meconium. The walls of the small intestines are thin, and the vessels contain a large amount of blood. The ascending colon is also much congested. The descending colon is anæmic, and is filled with numerous masses of hard fæces.

On removing the œsophagus we find in the loose tissue about it, below the bifurcation of the trachea, a grumous fluid resembling the gastric contents, but more inspissated. This is evidently part of the same process described in connection with the right lung. There is no suppuration or evidence of inflammation in the peri-œsophageal tissue. The œsophagus is softened, and it has probably been torn during the removal.

The *glands* at the base of the tongue and the follicles of the tonsils are considerably hypertrophied. The pharyngeal mucous membrane shows nothing abnormal, except the prominence of some isolated follicles. The larynx and trachea are normal.

The Œsophagus.—Just below the level of the cricoid cartilage the mucous membrane is corrugated and much congested. About four and a half inches below the cricoid the mucous membrane of the œsophagus begins to present a worm-eaten appearance, being actually riddled by numerous ulcers, the largest of which are about the circumference of peas, and the smaller, of pin-heads. The ulcerative process affects more especially the lateral walls of the œsophagus. The anterior and posterior walls in the median line are comparatively free. Opposite the bifurcation of the trachea two larger and perforating ulcers are found. These appear to result from the running together of smaller ones. The ulcer on the left side presents lacerated edges, and measures two and a quarter inches from above downward. The one on the right side is more circular. These ulcers correspond in position with the two main bronchi. The latter are slightly congested, but otherwise normal. The ulcer on the right side corresponds with the position of the excavation and softening in the right lung.

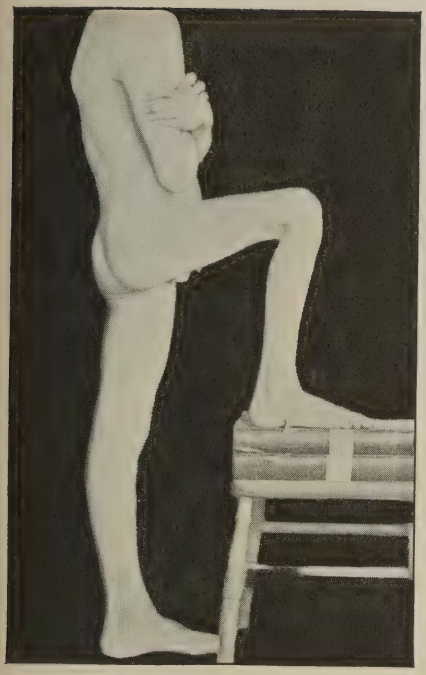


FIG. 1.—Case III. Showing angle of deformity with spinal column perfectly straight.



FIG. 2.—Case III. Showing best position before operation.

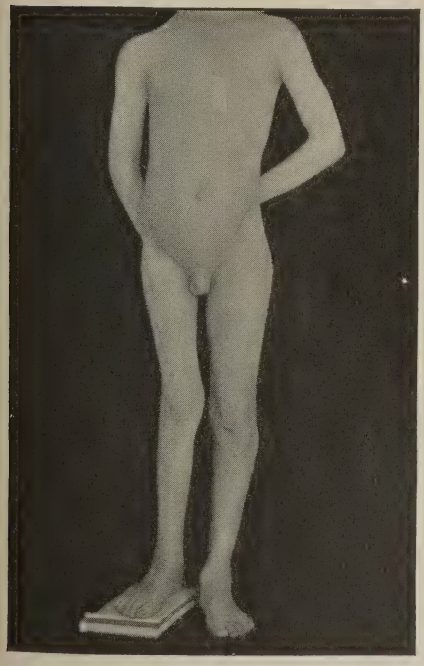


FIG. 3.—Case III. Showing final result



FIG. 4.—Case VI. Showing deformity before operation.



FIG. 5.—Case VI. Showing final result.



FIG. 6.—Case VII. Showing deformity before treatment by traction.



FIG. 7.—Case VII. Showing final result.



FIG. 8.—Case VIII. Before an osteotomy.

Below the seat of the larger ulcers, the ulceration continues, especially on the right side, down to the cardiac orifice. Some of the ulcers are very superficial, and others penetrate more or less the walls of the tube. The smaller ones present generally clean-cut edges. The mucous membrane is not congested, and the portions that are not ulcerated show irregular and rounded areas of pigmentation. These are frequently somewhat depressed, and appear to indicate the position of ulcers that have healed.

Microscopic Examination.—The preparation of the tissues for examination was commenced rather late. This, together with the action of the digestive fluids, makes the stain an unsatisfactory one. The marked features discovered are the anæmia of the tissues, the disaggregation of the tissue elements, the absence of extensive areas of inflammation, and the presence in all the layers of the œsophagus of large numbers of plasma-cells.

Most of the epithelial lining is absent in many places. The cells are either swollen and granular or they show evidences of loss of substance. They often produce the impression of being separated by a swollen intercellular substance. In some places we find areas of round-cell infiltration, but not extensive. The edges of one ulcer examined show very little evidence of inflammatory reaction, though there is some. In some places the epithelium has been completely removed by previously existing ulcerative processes. In its place we find a connective-tissue formation very poor in cells.

The muscular coat does not show evidences of degeneration. The voluntary muscular fibres extend lower than usual.

The connective tissue of the outer coat of the œsophagus shows some inflammatory reaction near the larger ulcers, but not the extensive cellular infiltration that we should find in an active suppurative process.

In my opinion, we have to deal here, in part, with lesions of long standing. We have evidences of repeated superficial ulcerations of the œsophagus. The absence of hyperplasias, of thickening, of congestion, and the clean-cut edges of the more recent ulcers would exclude the view that they were the result of a chronic catarrhal inflammation. Besides, the etiological factor for such a chronic inflammation is not apparent.

The ulcers have the anatomical features of peptic ulcers. We may look upon hysterical ischæmia as the cause of the want of resistance of the œsophageal mucous membrane. The microscopic sections show the blood-vessels to be remarkably empty. If we add to this the existence of a certain degree of merycism in the patient, as shown by the power to regurgitate food at will from the stomach, we have a complete explanation of this rare lesion.

The question of *intra-mortem* or *post-mortem* œsophagomalacia deserves some consideration here. The majority of the cases of peptic ulceration of the œsophagus reported are supposed to belong to this class. They occur mostly in children in subacute brain affections.

Enough has been said of the present case to exclude it from this cate-

gory. The perforation on the right side occurred during life, and was the starting-point of the fatal pneumonia.

I have no doubt, however, that the process was in part one of post-mortem or intra-mortem digestion. The extensive softening and breaking down of the lower part of the œsophagus could scarcely be accounted for in any other way. It is, in fact, very probable that the large lacerated perforation on the left side was the result of tearing during the removal of the organ.

There is, finally, one suggestion that I wish to throw out for those who may have the opportunity to study a case like this under more favorable circumstances as to the fixation of the tissues. I would call special attention to the very large number of plasma-cells. They have suggested to me the possibility of an amœbic infection of the œsophagus.

I have to thank Dr. James Wallace for two photographs successfully taken of the specimen, which accompany this paper.

THE CORRECTION OF THE DEFORMITY OF HIP-DISEASE; ITS VALUE DURING THE PROGRESS OF THE DISEASE; ITS IMPORTANCE ON THE SUBSIDENCE OF ALL DISEASE: ONE HUNDRED CASES ANALYZED.[1]

BY V. P. GIBNEY, A.M., M.D.,

Surgeon-in-Chief to the Hospital for the Ruptured and Crippled, New York.

THE enormous amount of material furnished by a large orthopædic hospital brings us face to face with a very difficult problem in the management of the deformities that arise during the progress and at the end of tubercular osteitis of the hip. I take it that the object of every method of treatment is to protect the joint against trauma. Whether it is better to correct deformity that arises in the course of treatment, or that has arisen before treatment is begun, is a question concerning which there is an honest difference of opinion. Nature herself prefers to throw the limb into an abnormal position in order, as it seems, to protect the joint; yet she is powerless to prevent the reflex muscular spasm which is a persistent factor.

It has occurred to me that, in view of the difficulty that we encounter in correcting deformity in the course of the disease, the older surgeons have not erred so outrageously in giving little heed to these deformities. During a long period of intimate personal observation I have found myself revert-

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[1] Read before the American Orthopædic Association, in Washington, D. C., June, 1894.

ing to this period, and wondering whether, after all, it were not best to give less attention to the deformity while the disease is active, and simply supplement nature in her efforts to protect. I have entertained these thoughts because it is so easy to correct deformity long after the close of the disease.

The modern traction hip-splint, with which we have all become so familiar, is such a boon to humanity that we should be slow to criticise this apparatus, unless we can demonstrate a method of treatment that will afford equal comfort, and, at the same time, bring about a restoration of function and a limb free from deformity. To make myself clearer: all who have had a practical experience with the long traction splint know that it does prevent, as a rule, exacerbations; that it does give the patient a comparatively comfortable life during the three or five years necessary for its use. For at least a dozen years I became familiar with the natural progress of the disease unchecked by any form of apparatus. I recall vividly the agonizing pain of hip-disease, the frequent exacerbations, the hectic fever after the spontaneous opening of an abscess, the confinement to the house, the bed, or the wheeled chair, and the painful position into which the limb was thrown in the different stages of the disease. I can contrast with this another period of nearly a dozen years with this affection treated by apparatus, and I recall with much pleasure the ability with which these sufferers can get about, the freedom from the night cries and terrors of the disease, and the good condition of health brought about by freedom from reflex pains and burrowing abscesses.

It must be borne in mind that the peroneal crutch supplemented by traction is a means of continuous traction night and day. While I am willing to admit that deformity is the rule, I know full well that this can be corrected in a large proportion of cases, and that the correct position can be maintained. This paper is presented, not in defence of the present traction splint, but simply to show what can or cannot be done by persistent efforts at preventing deformity, as well as correcting it, in all stages of the disease.

Notwithstanding these reflections, I am convinced that it is better to correct the deformity, and at the same time employ appliances which will prevent its recurrence. The mode of correcting is not always clear. We have, for instance, several methods: the employment of weight and pulley on an inclined plane, which seems to be the most popular; the employment of manual force under an anæsthetic; the division of tendons, muscles, and fascia, supplemented by manual force, with retention in a fixed apparatus; the excision of the joint, and osteotomy. The cases I have collected for analysis include nearly all of these forms of correction.

It is claimed by many, and with a certain degree of plausibility, that a patient can get more pleasure out of life if the case is cured with a moderate grade of deformity; for instance, fixation at an angle of about 150° in flexion. One can sit down the more readily with such deformity, but

can walk with more ease and facility if the case be cured without limb deformity.

The early recognition of the disease has not been sufficiently impressed upon the mind of the general practitioner, and hence we who practise orthopædic surgery must encounter a large proportion of instances wherein deformity has already occurred and where it is impossible to conduct the case to a perfect cure. I use the term "perfect cure" to mean a restoration of the joint with the normal functions preserved, freedom from any deformity, and minimum amount of shortening. We have, therefore, a large percentage of advanced cases, and I am free to confess that we are not yet sufficiently skilled in the management of these cases to assure the patient that a perfect recovery will ensue from any plan or method with which we are familiar. All the members of this association, I am sure, claim that, given the disease in its early stage prior to any shortening or deformity, a perfect result can, as a rule, be secured. It should be our aim, then, as orthopædic surgeons, to impress this claim upon the professional public, and lose no opportunity to demand a recognition of our abilities in this direction.

Before taking up the analytical part of the paper, I wish to present a few cases that have seemed to me worthy of record. I make no claim that these are not selected cases; but a proper selection, with a study of the deformity itself, will enable us, I think, to get better results and make a better choice of cases for operation.

Case I.—Maria D., twenty years of age, was referred to me on the 27th of January, 1891, for the correction of deformity. I found that she had been treated many years before at the Hospital for the Ruptured and Crippled. She had had the usual expectant treatment, abscesses had formed, sinuses had resulted, and these sinuses had closed. After she left the hospital some one had applied a long Taylor splint with free joint at hip and cumbersome in the extreme. This girl being compelled to earn her living, and having a great amount of walking to do, she was thus caused a great deal of pain, with impaired nutrition, and her condition was a source of great annoyance. The atrophy of the entire limb was extreme. There were three inches practical shortening, two and a half inches real shortening. The limb was fixed at an angle of about 135° with the pelvis.

I advised a discontinuance of the apparatus, but she found that this only added to her discomfort, and on March 21, 1891, at the New York Polyclinic, I made an osteotomy below the trochanter minor, subcutaneously, brought the limb down parallel with its fellow, and encased limb and body in plaster of Paris. Beyond the nausea from the ether she suffered very little in consequence of the operation, and on April 22 the plaster was removed. Union at the site of fracture was good; the limb was in excellent position. At this time there were one and a quarter inches practical shortening, with the real shortening unaffected. The use of axillary crutches and long traction splint for a few weeks was sufficient to complete the cure. By July 21, 1891, she had abandoned the splint, but was using

one crutch. By November, 1891, there was only one inch practical shortening, the angle of deformity was about 170°, the limb was well abducted, she wore only a cork wedge in the heel of her shoe, and walked without fatigue. I have seen this patient from time to time up to the present. She does not wear any cork wedge in the heel of her shoe, she walks long distances without fatigue, earns her living with much more facility, her general health continues good, the limb is developing a great deal in size and strength, and it is difficult for one to appreciate her condition as compared with what it was in January, 1891.

Case II.—Laura T., eleven years of age, came under treatment April 18, 1890. She had been under treatment for five or six years also in the out-patient department of the hospital, under the care of my predecessor. She had not worn any apparatus during that period.

The deformity was about 150°. I was not convinced that the disease had subsided, and employed a long rack-and-pinion splint, which served an admirable purpose. I failed, however, to correct the deformity; her gait was very awkward without the apparatus, and on March 11, 1891, I did a subcutaneous femoral osteotomy, with the result that her shortening was reduced from about three inches to half an inch. The apparatus was continued for nearly a year after the operation, and it was not until May, 1892, that I allowed her to walk without any support. Her angle of greatest extension was about 170°; there was little or no motion at the hip, though there was no adduction. There was at this time less than an inch shortening. I saw her about a year later, and she walked very well indeed, presented scarcely any deformity, and the family were delighted with the result.

Case III.—Edward M., thirteen years of age, has had quite a varied experience. The disease developed in early life, say about three or four years of age. He came under my care at the hospital. I was unwilling to take him under treatment, because at that time I had wearied of the expectant plan, and took the liberty of referring him to the late Dr. Stillman, who at that time was quite enthusiastic about his "sector" splint. He took quite an interest in the case at first. The patient and the sector splint figured in some illustrated catalogues for a long while. The deformity increased in spite of the splint, the mother became discouraged, and on returning to me, I put the case under the care of Dr. Judson, who employed the long splint. He finally succeeded in arresting the disease, presenting his case as cured in a series reported in volume ii. of the *Transactions* of the Academy. The deformity, however, persisted, and in October, 1890, the case came under my observation, this time with the consent of Dr. Judson himself.

I advised an osteotomy, but it was not until August 21, 1891, that I succeeded in bringing him to the operating-table. The angle of greatest extension then was 112°, greatest flexion 90°. The practical difference in the length of the limbs was five inches. The hip was marked with cicatrices.

Tip of the trochanter was two and a half inches above Nélaton's line. The lordosis was very marked.

Under ether I made numerous subcutaneous divisions of the tendons and fascia below the groin and on the outer side of the thigh, upper portion. Under force, after these procedures, it was possible to reduce the deformity only about 20°. An osteotomy was, therefore, done, and I fancied that the deformity was fully corrected. The mother had grown so accustomed to change that she did not rest until the boy had been removed from the hospital, which was October 15, 1891, less than two months after the operation. The union, however, seemed good, and there was no infiltration about the site of operation. The practical difference in the limbs at this time was two inches. The angle of greatest extension was 165°. By February 6 he had lost 10°, and the practical shortening was two and a half inches. I employed a short Thomas splint to supplement the traction splint which had been used since the removal of the plaster. By April 9, 1892, he had a deformity of 165°, though the apparent deformity was much less.

I did not keep him under close observation, and by September 10, 1892, his angle of greatest extension was 140°, practical difference in the limbs two and a half inches. The tendo Achillis was likewise shortened, and this added to his deformity. Another osteotomy was advised, and a few days later the operation was performed, with the result a year later of 160°, a two-and-three-quarter-inch-high shoe, and a very good limb for locomotion. The lordosis is very slight.

In making a free selection from the large number of cases fully recorded among my notes, I wish to present two or three additional cases in adult life wherein the results have been wonderfully good.

Case IV.—C. G., male, about twenty-five years of age, had been for many years, at least ten or fifteen, under the care of a very worthy member of our profession, and one whose results were second to none. This surgeon had conducted the case through all the stages of the disease, but there remained a high degree of deformity, which deformity was a great source of annoyance, and which interfered seriously with his education, and still later with a vocation in life.

At the time of operation, January 23, 1891, I had some misgivings lest the ether might not be well borne, but on finding his urine normal, I proceeded with the operation,—a subcutaneous osteotomy. Prior to this, however, the measurements were taken, and it was found that he had about five inches practical shortening; that the trochanter was very prominent; that the angle of greatest extension was 120°, a very slight range of motion. He proved a most exasperating patient to manage, and it was necessary on the second day to remove the plaster and set the fractured limb again. A month later union was firm, and he had an inch and three-quarters shortening. A month later the angle of greatest extension was found to be 170°. During the succeeding six months he lost about 5°, but had gained in health and strength, had practically a straight limb, walked without a high

shoe, and at last accounts, a year and a half after the operation, he was walking with great ease and was in excellent health.

CASE V.—Miss A., about thirty years of age, presented a hideous gait, an extreme lordosis, wore a very high shoe, and walked with great difficulty. She had been an inmate of the Hospital for Ruptured and Crippled many years before, and had recovered with this deformity. Her angle of greatest extension at the time I made my observation, April 23, 1891, was 105°. There was about 15° adduction, five and a half inches shortening.

An osteotomy was done May 9, 1891, subcutaneously, and the limb brought to 165°. She suffered for two or three weeks subsequent to the operation from a distressing tympanites attended with vomiting. It was difficult to retain the limb in good position because of this complication. The plaster was removed June 12. There was bony union. There was practically no shortening. She wore a jointed Dowse splint for several months, and my last observation was (March 16, 1893): "She has grown rather stout, walks remarkably well, presents very little lordosis, does not wear any high shoe, can walk long distances, and the result has surpassed our expectations."

CASE VI.—B. R., a gentleman twenty-seven years of age, referred by Dr. William T. Bull, May 16, 1893. His angle of deformity was about 130°, with marked adduction. There was, however, only one-half inch practical shortening and three-quarters of an inch real shortening.

On account of matters of expediency this gentleman insisted on the operation, which was done May 19. In addition to the osteotomy the adductors were divided, and the limb brought to 180°. He suffered very little inconvenience from the plaster, did not wear a splint, but used crutches for a few weeks. My last note was July 10, 1893, when it was found that he had an angle of deformity of about 165°. There was no difference, real or practical, in measurements. He writes under date of November 6, 1893,—

"DEAR DR. GIBNEY,—If you have any desire to see your handiwork, I should be very glad to drop in and see you any time in the afternoon that would be convenient. I am sure you have never seen a fellow with an ankylosed hip-joint who could get around better than I. Yours sincerely, ———."

CASE VII.—F. K., a boy, six years of age, admitted to hospital July 28, 1891. Ability to extend his thigh to only 100°. The exact deformity is shown in Fig. 4.

Tenotomy failed to correct more than to 125°, and a few weeks later osteotomy was performed, and at the end of six weeks union was firm. The final result is shown in Fig. 5.

CASE VIII.—Margery K., ten years of age, was an old case treated on the expectant plan, and discharged with limb in excellent position. At the end of two years, the splint having been removed by the mother, she returned to the hospital, and her deformity is shown in Fig. 6.

She was put upon inclined plane with weight and pulley from November 7 to June 7. The result was excellent, and in 1894 she was found still wearing the Dowse jointed splint; the position is shown in Fig. 7.

CASE IX.—Mary McE., thirteen years of age, admitted May 7, 1889, with deformity at 135°. The position of the limb and the bony prominence about the trochanter is shown to best advantage in Fig. 8.

An osteotomy was done on June 5, and in September the position was as shown in Fig. 9. The girl has been under observation in the out-door department up to the present time, and while no subsequent photograph has been taken, the result is about as shown in Fig. 9.

CASE X.—Carrie F., aged five and a half, was admitted November 3, 1893. She had never had any treatment. The angle of deformity is shown in Fig. 10.

There was division of the hamstrings, followed by the use of plaster of Paris for a few weeks, and then a long spring. Long subsequent to this date an abscess formed, the cicatrix of which is shown in Fig. 11. The good position was maintained throughout by apparatus, and at the time of her discharge, late in the spring of 1894, the position of the limbs is shown in Fig. 11.

CASE XI.—Robert Z., twelve years of age, presented on admission, June 30, 1891, a deformity as shown in Fig. 12.

The treatment was osteotomy, and the final result is shown in Figs. 13 and 14.

CASE XII.—M. K. This case is presented to illustrate a deformity of the hip due to disease, yet complicated with Pott's disease of the spine. The kyphosis is shown in Fig. 17. Fig. 15 shows the hip deformity when the boy came into the hospital.

He was subjected to an osteotomy, and Fig. 16 shows a photograph taken two or three weeks afterwards in order to illustrate the plaster-of-Paris bandage.

The final result was most excellent. This boy went to the far West, and reports have come from time to time that he continues straight and has no recurrence of deformity, so far as the parents can tell. He was treated at the hospital about four years ago.

Referring now more particularly to the analysis of the one hundred cases. The tables show the number of the cases, the age of the patient when treatment was begun, the time in the course of the disease, or, more especially, the month or year from the inception of the disease. The next column notes the deformity. The next four columns give the method of treatment employed: *osteotomy*, which means always subcutaneous osteotomy; *force*,—that is, manual force,—under an anæsthetic, supplemented by the subcutaneous division of tendon, fascia, or muscles; *the splint*,—and by this is meant the portable apparatus which serves chiefly as a perineal crutch,—very little traction being employed; and *weight and pulley* on inclined plane.



FIG. 9.—Case VIII. Showing final result.

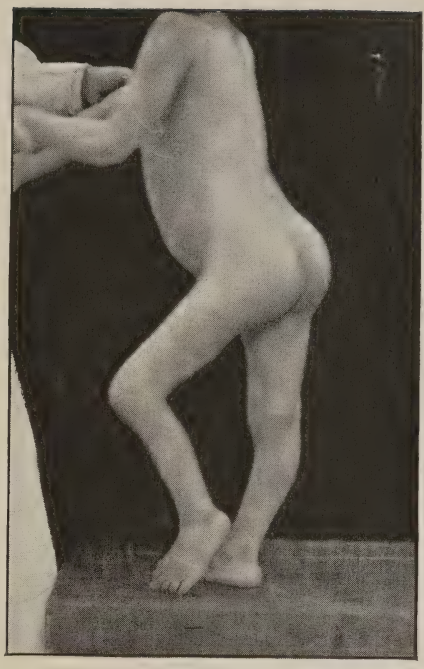


FIG. 10.—Case IX. Before beginning of treatment.

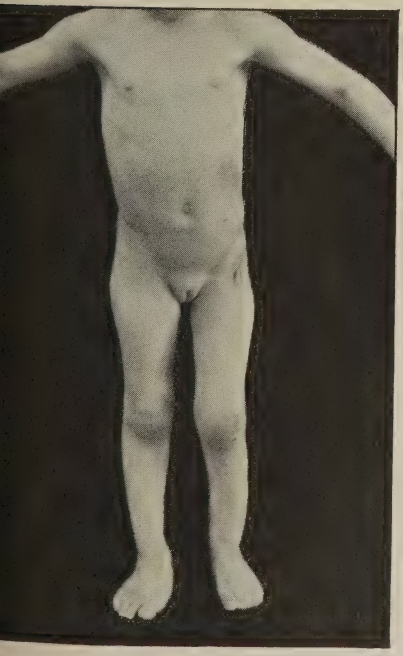


FIG. 11.—Case IX. After treatment.

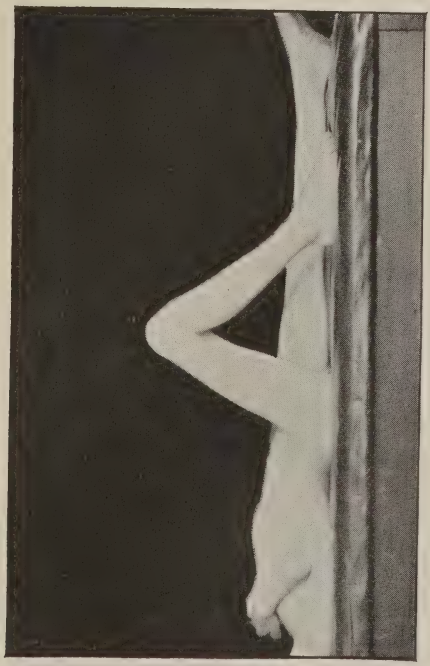


FIG. 12.—Case X. Showing best position before treatment.

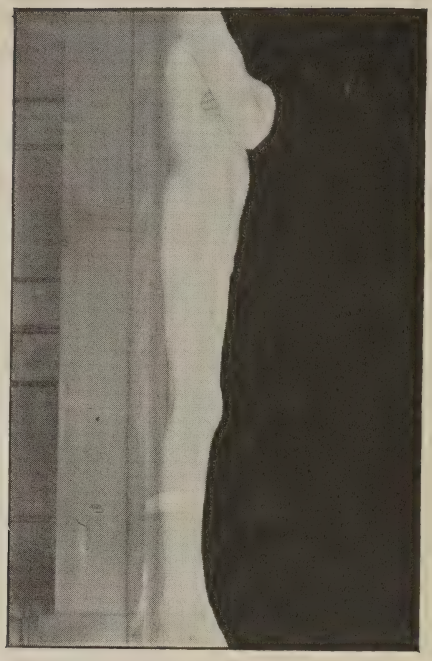


FIG. 13.—Case X. After treatment.

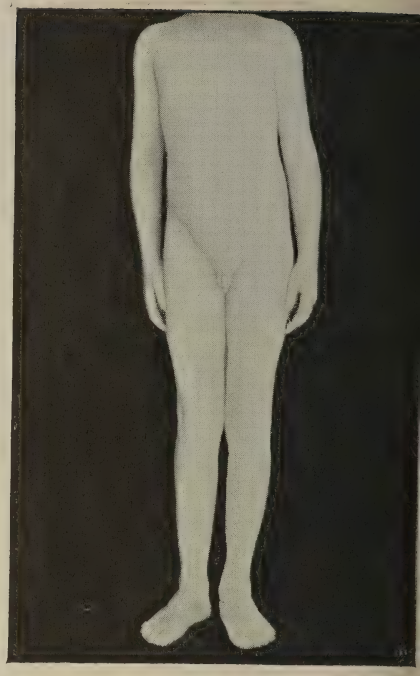


FIG. 14.—Case X. After treatment.



FIG. 15.—Case XI. Before treatment.



FIG. 16.—Case XI. A few weeks after osteotomy, in the first dressing.

The next column gives the interval between the result when the patient left the hospital and the date of the last observation when traced. Under the column "Result" is understood the final result, and the column "Net gain" explains itself. Under "Remarks" are included the presence of abscess, change in treatment, relapses, etc.

SUMMARY.

Interval.

There were 13 under six months; 23 under one year, including the six months' interval; 27 from twelve to eighteen months; 35 between eighteen months and three years; and 2 over three years.

Osteotomies.

There were 35 cases wherein osteotomies were performed: 10 were under the four-year limit, and 25 over the four-year limit. Of the 10: 2 lost 1.5°, 1.10°, and in 1 there was no gain; 1 gained 5°, 1 gained 10°, 2 gained 25°, 1 gained 30°, 1 gained 40°, 1 gained 60°. Of the 25, 1 lost 10°. Of the remainder, 1 gained 20°, 2 gained 25°, 4 gained 30°, 5 gained 35°, 2 gained 40°, 2 gained 45°, 2 gained 50°, 1 gained 55°, 1 gained 65°, 1 gained 70°.

Force, including Tenotomies, etc.

There were 30 cases in which this was employed: 18 under the four-year limit, and 12 over the four-year limit. Of the 18, 1 lost 10°, 2 lost 15°, 1 lost 20°, 1 lost 30°, 1 no gain, 3 gained 10°, 2 gained 20°, 2 gained 25°, 1 gained 30°, 2 gained 35°, 1 gained 40°, 1 gained 85°. Of the 12, 1 lost 45°, 1 gained 5°, 3 gained 15°, 1 gained 20°, 1 gained 30°, 1 gained 40°, 2 gained 45°, 1 gained 50°, 1 gained 60°.

Splint.

There were 18 subjected to the splint treatment: 17 were under the four-year limit, and 1 over the four-year limit. Of the 17, 1 lost 5°, 3 lost 15°, 1 lost 20°, 1 lost 25°, 1 gained 0°, 3 gained 10°, 1 gained 15°, 4 gained 20°, 1 gained 25°, 1 gained 40°. Of the 1 over, 1 lost 15°.

Weight and Pulley.

There were 17 subjected to this treatment: 9 were under the four-year limit, and 8 over the four-year limit. Of the 9, 2 lost 15°, 3 gained 20°, 1 gained 30°, 1 gained 55°, 1 gained 75°, 1 gained 85°. Of the 8, 1 lost 15°, 1 gained 0°, 3 gained 5°, 1 gained 15°, 2 gained 30°.

Two cases where force was employed developed acute symptoms, which resulted in abscess, and finally death at the end of a year.

The paper might be further illustrated by cases, and established by illustrations of peculiar deformities, but it is assumed that sufficient has been presented to justify the title of the paper.

The subjoined tables, with remarks, are presented to complete the paper.

Number.	Age.	Time.	Deformity.	Osteotomy.	Force.	Splint.	Weight and Pulley.	Interval.	Result.	Net Gain.	Net Loss.	REMARKS.
1	5 yrs.	8 mos.	85°	.	1	.	.	1½ yrs.	170°	85°	. .	Abscess aspirated; cured; short Thomas.
2	4	1 yr.	130°	.	.	1	.	2½ yrs.	140°	10°	. .	170° when discharged; relapse.
3	13	5 yrs.	130°	1	.	.	.	1⅓ yrs.	160°	30°	. .	Caliper.
4	9	5½ yrs.	110°	1	.	.	.	. . . .	. .	. .	. .	Discharged.
5	10	6 mos.	135°	.	.	1	.	7 mos.	175°	40°	. .	P. p., then splint; sinuses all closed.
6	7	4 yrs.	155°	.	1	.	.	2 yrs.	110°	. .	45°	By force reduced from 135° to 165°; caliper.
7	4	1 yr.	150°	.	.	1	.	1½ yrs.	160°	10°	. .	W. & p., from 110° to 160°.
8	5½	3 mos.	160°	.	.	1	.	1½ yrs.	170°	10°	. .	Abscess incised and healed.
9	6½	2 yrs.	140°	.	.	1	.	2 yrs.	140°	. .	. .	D'ble hip; arth'y done; sinuses never closed.
10	14	5 yrs.	165°	.	1	.	.	. . . .	180°	15°	. .	
11	6	17 mos.	165°	.	.	1	.	11 mos.	180°	15°	. .	Abscess incised and closed.
12	8	2½ yrs.	160°	.	1	.	.	3 mos.	180°	20°	. .	Reduced in 3 mos. to 165°.
13	12	4 mos.	130°	.	1	.	.	2 yrs.	160°	30°	. .	Wears splint; no pain nor tenderness.
14	12	5 yrs.	160°	.	1	.	.	1 yr.	180°	20°	. .	Went back to 165° in one year.
15	8	6 mos.	160°	.	.	1	.	2 mos.	180°	20°	. .	In one year relapsed to 140°; splint; def. recurred to 140°.
16	10	2 mos.	145°	1	.	.	.	1½ yrs.	140°	. .	5°	Def. red. fr. 145° to 165° by oper.; dis. with spl.
17	7	2⅓ yrs.	140°	1	.	.	.	1½ yrs.	180°	40°	. .	Short Thomas and long splint.
18	7	3 mos.	160°	.	1	.	.	1½ yrs.	150°	. .	10°	Def. red. from 160° to 180°; dis. with spl.; recurred to 160°.
19	9	3¼ yrs.	165°	.	1	.	.	2 yrs.	150°	. .	15°	Def. red. 165° to 180°; dis. with splint; recurred to 150°.
20	12	2 yrs.	160°	.	.	.	1	1½ yrs.	180°	20°	. .	Def. red. in 3 wks. 150° to 180°; short Thomas and splint.
21	. . . .	. . . .	130°	1	.	.	.	2 yrs.	165°	35°	. .	
22	12	12 mos.	155°	.	1	.	.	3 yrs.	180°	25°	. .	Def. by f. & ten. red. to 150°; caliper; dis. with Dowse's; def. red. to 180°.
23	. . . .	. . . .	145°	.	1	.	.	2 yrs.	145°	. .	. .	M., f. & ten. 145° to 175°; dis. with spl.; relapse to 145°.
24	5¼	2 yrs.	120°	.	1	.	.	2⅔ yrs.	155°	35°	. .	F., def. red. 120° to 170°; abscess incised; healed; closed; dis. with spl.; brace removed; def. went to 155°.
25	7	7 yrs.	120°	1	.	.	.	4 yrs.	160°	40°	. .	Ost., red. 120° to 170°; rec. to 160° in 6 mos. (Read.) W. & p., no gain; spl.
26	7	6 mos.	130°	.	.	.	1	2½ yrs.	160°	30°	. .	Splint, def. red. by W. & p. 130° to 165°; rec. with spl. to 160°.
27	7	10 mos.	160°	.	.	.	1	2¼ yrs.	150°	. .	10°	W. & p. 2 mos., 160° to 180°; dis. with Dowse's; rec. to 150°.
28	10½	4 yrs.	150°	.	.	.	1	3 yrs.	180°	30°	. .	Splint; spl. removed; no recur'ce in 10 mos.
29	7	9 mos.	155°	.	.	.	1	2⅔ yrs.	145°	. .	10°	W. & p. 1 mo., 155° to 170°.
30	6	1½ yrs.	170°	.	.	1	.	2½ yrs.	155°	. .	15°	Spl., def. red., 170° to 180°; absc. disap. after dis.; rec. to 155°; wearing splint.
31	4	4 mos.	170°	.	.	1	.	2½ yrs.	145°	. .	25°	Abscess aspirated, relieved; wears spl.
32	8	4 yrs.	145°	.	.	.	1	1 yr.	175°	30°	. .	W. & p. 1 mo.; red. 145° to 170°; absc. incised; arth'y; spl. 2 mos., def. red. to 180°; spl. 1 mo., rec. to 150°.
33	8	4 yrs.	155°	.	.	1	.	2½ yrs.	140°	. .	15°	Def. at 155°; not red. in 3½ mos.
34	. . . .	. . . .	145°	.	.	.	1	2 yrs.	150°	5°	. .	W. & p., 145° to 160°; dis.; no br'e; rel'ps'd 10°.
35	16	1 yr.	120°	.	1	.	.	3 yrs.	165°	45°	. .	Private case.
36	10½	5⅔ yrs.	150°	1	.	.	.	1⅓ yrs.	140°	. .	10°	Ost., def. red. to 150°; W. & p. 1 mo., red. 165°; ost. again to 170°.
37	7	2 yrs.	145°	.	1	.	.	. . . .	155°	10°	. .	W. & p. 5 mos., 145° to 180°; absc. aspirated; in 9 mos. def. rec. to 155°.
38	9	1½ yrs.	115°	.	.	.	.	. . . .	. .	. .	. .	Excision; died.
39	18	10 yrs.	105°	1	.	.	.	2 yrs.	160°	55°	. .	Ost., def. red. 105° to 180; rec. 2 years later to 160°.
40	16	5	130°	1	.	.	.	1 yr.	160°	30°	. .	Private case.
41	7½	2 yrs.	90°	.	.	.	1	4 mos.	175°	85°	. .	Def. red. 90° to 175°.
42	9	5 yrs.	160°	.	.	.	1	2 mos.	160°	. .	. .	W. & p. in 2 mos. failed to red. def.
43	9	1⅙ yrs.	150°	.	.	.	1	1 mo.	175°	25°	. .	Splint and Thomas.
44	10	3 mos.	160°	.	.	.	1	1½ mos.	180°	20°	. .	
45	10	5 yrs.	165°	.	.	.	1	5 mos.	160°	. .	5°	M., f. & ten., red. 165° to 175°; W. & p.; def. rec. to 160°; spl. 5 mos., def. 160°.
46	5	3 yrs.	150°	1	.	.	.	1½ yrs.	175°	25°	. .	Absc. opened; healed; ost., 150° to 175°; rec. to 165° after dis.; spl. red. 175°; no absc.
47	6	1⅙ yrs.	115°	.	1	.	.	2 yrs.	165°	50°	. .	F. & ten., 115° to 170°; rec. in 1 mo. to 160°; no absc.: later sinus dis.; absc. re-establ'd.
48	11	3½ yrs.	155°	.	1	.	.	1½ yrs.	140°	. .	15°	W. & p., 155° to 170°; caliper; spl. & Thomas.
49	14	3 yrs.	155°	1	.	.	.	1½ yrs.	160°	5°	. .	Ost., 155° to 175; spl. 1 mo., rec. to 165°.
50	8	7 yrs.	120°	.	1	.	.	1 yr.	135°	15°	. .	F. & ten., 120° to 165°; wears spl.
51	8	12 yrs.	135°	.	1	.	.	1 yr.	180°	45°	. .	
52	6	3 yrs.	120°	1	.	.	.	1⅓ yrs.	147°	27°	. .	Ost., 120° to 175°; although absc.; rec. to 145°.
53	30	25 yrs.	105°	1	.	.	.	2 yrs.	165°	60°	. .	Private case.
54	6	1 yr.	155°	.	.	1	.	3⅓ yrs.	140°	. .	15°	Spl., 155° to 175°; dis. with spl.; rec. to 140°.
55	4	. . . .	120°	.	1	.	.	2 yrs.	90°	. .	30°	Def. red. 120° to 170°; splint; absc.; 90°.
56	20	16 yrs.	135°	1	.	.	.	3 yrs.	170°	35°	. .	Private case.
57	4	. . . .	130°	.	.	1	.	1½ yrs.	125°	. .	5°	Was excised at Roosevelt Hospital.
58	10	3 mos.	110°	.	.	.	1	1⅔ yrs.	165°	55°	. .	W. & p. 5 wks., 110° to 180°; rec. to 160° in 2 months.

Number.	Age.	Time.	Deformity.	Osteotomy.	Force.	Splint.	Weight and Pulley.	Interval.	Result.	Net Gain.	Net Loss.	REMARKS.
59	9 yrs.	1 yr.	155°	.	.	1	.	1½ yrs.	140°	. .	15°	No treatment to red. def.; absc. later, then excision.
60	6½	. . . .	. .	.	.	.	.	. . . .	. .	. .	. .	
61	5	3 wks.	160°	.	.	.	1	4 mos.	180°	20°	. .	Thomas and long splint.
62	10	3½ yrs.	140°	1	.	.	.	1½ yrs.	150°	10°	. .	W. & p., no result in 5 wks.; ost.; def. red. 140° to 180°; dis. with short Thomas.
63	12	7 wks.	135°	1	.	.	.	1½ yrs.	170°	35°	. .	Private case.
64	4	2⅙ yrs.	120°	.	1	.	.	2½ yrs.	100°	. .	20°	Force, def. red. 120° to 150°; dis.; no brace; rec. to 100°.
65	4	1 yr.	160°	.	1	.	.	1 yr.	160°	. .	. .	Force, def. red. 160° to 180°; dis. with long splint; rec. to 160°.
66	10	. . . .	. .	.	.	.	.	. . . .	. .	. .	. .	
67	12	6 yrs.	120°	1	.	.	.	8 mos.	145°	25°	. .	Ost., 120° to 170°; dis. with long splint and short Thomas; rec. to 145°.
68	4½	2 yrs.	150°	.	1	.	.	3 yrs.	135°	. .	15°	W. & p. 3 mos., 150° to 160°; caliper; rec. 135°.
69	5½	4 mos.	105°	.	.	.	1	1⅓ yrs.	180°	75°	. .	W. & p., 105° to 170°; relapse; W. & p., 160° to 175°; absc. aspirated; disappeared.
70	8	4 yrs.	100°	.	1	.	.	6 mos.	160°	60°	. .	Force, 100° to 160°; W. & p. 1½ mos., 160° to 175°; spl., 3 mos., 175° to 180°.
71	8	2 yrs.	120°	.	.	.	1	6 mos.	140°	20°	. .	Spl. and short Thomas; after dis., W. & p. 2 mos., def. red. 120° to 160°; spl. 2 wks., 160° to 165°.
72	16	8 yrs.	140°	1	.	.	.	7½ mos.	165°	25°	. .	Ost., 140° to 170°.
73	6	3 yrs.	100°	1	.	.	.	7 mos.	160°	60°	. .	Ost., 100° to 175°; spl. 4 mos., red. to 180°.
74	27	20 yrs.	130°	1	.	.	.	1 yr.	165°	35°	. .	Private case.
75	6¾	3 mos.	120°	.	1	.	.	3 yrs.	160°	40°	. .	F. & t., 120° to 165°; calpr. 7 mos., red. to 180°.
76	10	9 mos.	130°	1	.	.	.	10 mos.	130°	. .	. .	Ost., 130° to 175°; caliper; rec. to 135° in 6 mos.; dis. w'h short Thomas; rec. to 130°.
77	7	12 yrs.	130°	1	.	.	.	10 mos.	160°	30°	. .	Ost., 130° to 160°.
78	17	12 yrs.	90°	1	.	.	.	10 mos.	140°	50°	. .	Ost., 90° to 165°; dis. with splint; rec. to 140°.
79	8	2 yrs.	150°	.	1	.	.	10 mos.	160°	10°	. .	F. & ten., 150° to 170°: dis.; caliper; relapse to 160°; wore nothing.
80	7	3 yrs.	150°	.	1	.	.	1 yr.	160°	10°	. .	F. & ten., 150° to 170°; splint; rec. to 160°.
81	9	6 yrs.	150°	.	.	.	1	1 yr.	165°	15°	. .	W. & p., 150° to 160°; absc. during treatment not harmful; spl., 1 yr.; red. 160° to 165°.
82	9	7 yrs.	130°	1	.	.	.	1 yr.	180°	50°	. .	Ost., 130° to 180°; caliper 1 yr.; no recurrence. Died of meningitis.
83	5	1½ yrs.	140°	.	.	1	.	5 mos.	165°	25°	. .	Splint; absc. incised; def. red. 140° to 175°; recurrence 1 mo. to 150°.
84	4	6 mos.	150°	.	.	.	1	5 mos.	180°	30°	. .	W. & p. 1 mo., 150° to 175°; wore short Thomas 6 mos., 175° to 180°.
85	12	9 yrs.	145°	.	1	.	.	6 mos.	150°	5°	. .	F. & ten., 145° to 165°; spl. and sh. Thomas.
86	4½	6 mos.	160°	.	.	1	.	1⅔ yrs.	180°	20°	. .	Def. red. 160° to 180°; no recurrence at end of 3 mos.
87	7	4 yrs.	55°	.	.	.	1	2⅔ yrs.	160°	5°	. .	W. & p. 1 wk., 155° to 170°; dis. with Poly.; recur. to 135°. (Read.) Absc. aspirated and disappear'd; spl. in hosp., 135° to 160°.
88	4½	4 yrs.	110°	.	1	.	.	1 yr.	150°	40°	. .	Died soon after dis.; f. & ten., 110° to 150°; old absc. opened; excision of hip.
89	15	9 yrs.	118°	1	.	.	.	1½ yrs.	160°	40°	. .	Private case.
90	13¼	10 yrs.	112°	1	.	.	.	1 mo.	170°	68°	. .	Ost., 112° to 170°; recurrence in 1 yr.; ost. again; recurrence to 165°.
91	8	3⅔ yrs.	145°	1	.	.	.	2⅙ yrs.	170°	25°	. .	Ost., 145° to 170°; no recur. in 2 yrs.; hip spl.
92	8	6 yrs.	90°	1	.	.	.	2 mos.	155°	65°	. .	Ost., 90° to 155°; dis. with hip splint.
93	10	6 yrs.	130°	1	.	.	.	4 mos.	175°	45°	. .	Ost., 130° to 175°; dis. with hip spl.; sinus discharged slightly.
94	6¼	8 yrs.	160°	.	.	.	1	49 days	165°	5°	. .	W. & p. 7 wks., 160° to 165°.
95	8½	. . .	135°	1	.	.	.	1 mo.	175°	40°	. .	Ost., 135° to 175°; spl. applied after removal of p. p.
96	21	16 yrs.	. .	.	.	.	.	. . . .	. .	. .	. .	
97	5	3½ yrs.	145°	.	.	.	1	6 mos.	165°	20°	. .	W. & p., 145° to 165°; dis. with long splint.
98	6	3 yrs.	150°	1	.	.	.	2½ yrs.	140°	. .	. .	Ost., 150° to 175°; dis. with spl.; removed; relapse, 140°: abscess.
99	11	2 yrs.	160°	.	1	.	.	3 yrs.	180°	20°	. .	F. & ten., 160° to 175°; in 1½ mos. dis. from hosp. (Read.) In 6 mos., w. & p., 145° to 170°; dis. with sh. Thomas, 170° to 180°.
100	22	14 yrs.	120°	1	.	.	.	1½ yrs.	165°	45°	. .	Private case.

THE PRESENT STATUS OF ASTHENOPIA.[1]

BY F. BULLER, M.D.,

Montreal,

Professor of Ophthalmology, McGill University; Ophthalmic Surgeon to the Royal Victoria Hospital of Montreal.

GENTLEMEN,—The science of medicine and the art of surgery include so wide a range of knowledge and experience that no one man can ever hope to grasp the whole subject, or to become an expert in more than a limited area of the sea of work in which he finds himself floundering so soon as the portals of our profession have opened for his admission. For this reason specialism has become more and more of a necessity, and it is through specialism, tempered by a wider knowledge, that future progress must be made. It is, therefore, well that we can all meet together, from time to time, and compare notes, so to speak. It is helpful and encouraging to learn what is being done by workers in other parts of the same field. I, myself, should feel that I had not done my duty if I did not occasionally have some contribution to offer my colleagues in medical conclave assembled. I know the subject I have chosen for to-day will interest some, perhaps more than a few of you, because asthenopia is of such frequent occurrence that every physician must time and again meet with it in some of its manifestations. The term asthenopia is, of course, generic, and includes quite a number of visual disturbances, all of which present the salient characteristic of inability to use the eyes in near work without discomfort. The asthenope is perpetually reminded that he possesses organs of vision, and many devote a considerable portion of their time to estimating the chances of avoiding what they conceive to be an impending blindness. These gloomy forebodings are mightily strengthened by the comforting assurance of friends, and, I may add, now and again of medical advisers, that the symptoms probably indicate some serious disease of the optic nerve. The symptoms complained of vary from slight pricking or burning sensations in the eyes themselves to severe distress in or about the eyes, or to widely-extended and sometimes violent perversions of sensation, such as frequent and intense headache, pains in the back of the neck or spine, giddiness, nausea, and in some instances attacks of vomiting, when the use of the eyes is persisted in. There is, in fact, so far as I am aware, no purely functional disease capable of causing a more genuine and persistent distress than is suffered in the severer forms of asthenopia. Taking this affection

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[1] Read before the Canadian Medical Association at St. John, N. B., August 23, 1894.

in its widest sense, I am under the impression that more than half the entire time and attention of ophthalmic surgeons is devoted to discovering the causes, and finding means for the relief of this class of patients. If I may be permitted to express another general impression, it is to the effect that asthenopia is more prevalent on the North American continent than elsewhere. I am aware, however, that general impressions are often wanting in scientific accuracy, and on closer study may prove to be erroneous. This impression is derived from two sources. *First*, from personal observation both in Europe and America; and, *second*, from the fact that the American literature of this subject during the last twenty years shows more minute attention has been given to this department of ophthalmic surgery in America than it has received in any other country. Twenty years ago, if one may judge by the text-books of ophthalmology of that period, only two forms of asthenopia were recognized by ophthalmologists. *First*, accommodative asthenopia as met with in hyperopia and astigmatism; *second*, muscular asthenopia, such as occurs when there is insufficiency of convergence, notably in certain cases of myopia. A very brief discussion of these two forms seems to have satisfied the writers of ophthalmic treatises in those days that they had done ample justice to the subject. I could name many European authors of much later date who seem to have advanced no further in this direction. I do not think any one can practise ophthalmology very long without discovering that there are many persons who present no appreciable error of refraction, and no fault in convergence, but are, nevertheless, tormented by difficulty in using the eyes in near work, and by other functional disturbances associated with the act of vision, and there are others in whom, when an error of refraction has been ever so carefully corrected, little or no relief from the asthenopic symptoms is obtained. These circumstances have necessarily led to a closer study of the subject, with the result that we are now able to recognize quite a number of conditions other than those already named, which give rise to asthenopic manifestations. The errors of refraction are, of course, the most frequent source of asthenopia. Hyperopia, chiefly on account of the demand that this condition makes on the mechanism of accommodation; astigmatism, the same, with the additional disturbing element of imperfect retinal images, which nature abhors not less than she does a vacuum, but which the unassisted eye is wholly unable to correct. Myopia may give rise to asthenopia also, but not so often as to the former conditions. The asthenopia of myopes is due either to disassociation of the functions of accommodation and convergence or to the increased difficulty of adequate convergence when the antero-posterior diameter of the eyeball is considerably increased, as it always is in the higher grades of axial myopia.

It is not my purpose to discuss the subject of errors of refraction and their correction; suffice to say that asthenopia associated with any considerable error of refraction, and sometimes even with comparatively trivial errors, will generally disappear when these are suitably corrected. If not,

some fault in the equilibrium of the extra-ocular muscles will commonly be discovered when carefully sought for. In some instances the refractive error has of itself induced a false state of equilibrium, or rather a defective equilibrium, a perverted muscular habit, so to speak, which must be overcome before the optical correction can be worn with comfort, and perseverance in the use of the glasses selected for several days or weeks may be necessary before complete relief is obtained. There is, however, no reason why a pair of eyes presenting considerable error of refraction, or any error of refraction, small or great, should not also have some muscular fault quite independently of the refractive error. This circumstance has evidently been overlooked by those who claim that faults of equilibrium always disappear with correction of the associated refractive error. I have observed many cases in which the most exact correction, worn for months and years, has utterly failed in this respect. That there are muscular faults capable of inducing asthenopia in emmetropic eyes is a matter of every-day experience, and it goes without saying that such cases are beyond the scope of either spherical or cylindrical glasses. From this fact we are justified in assuming that muscular faults are only susceptible of relief by correction of refraction, or defects in accommodation in so far as they happen to be directly dependent on optical defects, or some departure from the normal in the mechanism of accommodation.

It is somewhat remarkable that, although for nearly half a century no one has seemed to doubt the existence of asthenopia from the defective power of convergence or, as is commonly and loosely stated, insufficiency of the internal recti, yet it is only within the past few years that attention has been directed to faulty action on the part of the other five pairs of extra-ocular muscles, and this notwithstanding the fact, so well and so long understood, that an impairment in the functions of any one of the twelve extra-ocular muscles necessarily unbalances all the others. Now, it has been found that insufficiency of divergence is a much more common defect than that of convergence, and, when present, no less capable of inducing visual disturbance than is the latter. Faults in the vertical movements of the eyes are also by no means infrequent, and may occasion extreme distress, or asthenopia associated sometimes with widely extended reflex phenomena. Owing to the limited power of rotating the eyeballs possessed by the superior and inferior recti, comparatively trivial faults in these muscles are liable to create much disturbance. Just as in the case of refractive errors, there is no constant or direct relation between the degree of error and the inconvenience it may induce. So much depends on the stability of nerve-power, occupation, state of health, and general surroundings of the individual that each one must be dealt with according to circumstances, and quite independently of hard-and-fast rules. Only this, that the conscientious ophthalmic surgeon need not hesitate to adopt whatever means of treatment seem to him the most likely to give the patient certain and permanent relief. Sometimes all that may be necessary will be change

of occupation, or such treatment as will tend to invigorate or restore the general health. In other cases the use of prismatic glasses suitably adapted will suffice, but in a certain number of muscular faults permanent relief can be obtained only by surgical interference of a kind that will establish more or less completely an equilibrium of the ocular muscles. This may be extremely simple and easy of achievement, or it may be a most difficult and tedious undertaking. Under no circumstances should an operation on the extra-ocular tendons be undertaken unless the indications for its performance are clear and definite, and even then the result will largely depend on the skill and judgment of the operator. There are a few cases of asthenopia which seem to originate in undue weakness of the ciliary muscle, cases in which apart from hyperopia or presbyopia the near point of accommodation is removed beyond its proper limits, and others in which near vision may be perfect for a short time, but cannot be maintained owing to weakness of the ciliary muscle. In these the local use of eserine or pilocarpine will be of service, so also will general roborant treatment. Now and then, among elderly people, we meet with asthenopia apparently caused by loss of transparency in the refractive media, such as incipient cataract. In these it is probable that imperfect retinal images create a reflex disturbance. Reflex asthenopia of a different kind is by no means uncommon. We meet with it often in connection with nasal catarrh and nasal deformities causing pressure of opposed mucous surfaces, surfaces which, under normal conditions, are never habitually in contact with each other. Two such conditions are to be especially noted. *First*, an hyperplastic or polypoid condition of the mucous membrane covering the anterior extremity of the middle turbinated; *second*, a spine projecting from the septum and coming in contact with the inferior turbinated. Both of these conditions require surgical interference for their relief.

Another cause of reflex asthenopia is found in the teeth. Carious teeth with ulcerated roots, especially in the upper jaw, are to be looked for, and set to rights or removed. Sometimes disease of the roots of the teeth will, for a time at least, elude discovery and make the diagnosis perplexing. So, too, disease of the antrum and perhaps of the other facial sinuses should be excluded in making a diagnosis. By far the most frequent, troublesome, and persistent reflex asthenopia is met with in young or middle-aged women who have suffered for a considerable time from uterine troubles; some of these recover from their asthenopia when cured of the uterine disease. I have already alluded to these cases at some length in a paper read before this society by Dr. Alloway at a former meeting, and will, therefore, refer you to that paper for what I might say in this connection.

There remains for consideration a considerable class of asthenopes whom we cannot place in any of the groups of cases I have mentioned. These last we can only ascribe to that ill-defined condition known as neurasthenia, but why some neurasthenics without discoverable ocular defect should be able to use their eyes with comfort and others only with difficulty, amount-

ing perhaps to total disability, for near vision is one of the problems we have yet to solve. There are, moreover, some persistent cases of asthenopia of unknown origin which present none of the general symptoms supposed to be characteristic of neurasthenia. For these we can only hope to find a more definite place for their classification after further careful study.

I do not think we are justified in assuming that there is such a condition as asthenopia of centric origin until we can define the centric lesions upon which it is supposed to depend, or which are known to give rise to asthenopic symptoms. There may be cases traceable to known forms of dyspepsia, but I have never, to my knowledge, met with such, and I am not aware that dyspepsia, one of the commonest of all human ailments, is associated with asthenopia so often as to justify the assumed relation of cause and effect between them. It is likely that time will unravel the difficulties of diagnosis which surround the remaining obscure cases of asthenopia, but, for my own part, I prefer an attitude of agnosticism towards all that I cannot understand rather than the easy way of concealing want of knowledge under the guise of unmeaning phraseology.

SOME ANATOMICAL MNEMONICS.[1]

BY HENRY W. CATTELL, A.M., M.D.,

Demonstrator of Morbid Anatomy in the University of Pennsylvania.

In common with many other branches of learning, the study of anatomy is, in spite of its details, capable of being facilitated by the application of the principles of association of ideas, a help to the memory formally recognized by early Greek and Latin writers. By means of simple mnemonic devices we may securely fix in the memory the proper grouping of related anatomical and surgical data, on just the same principle as the mental confusion apt to arise from the varying number of days in the calendar months is instantly cleared by recalling the well-known rhyme invented for that purpose.

While the utility of such aids is unquestionable, as many can testify, nevertheless our text-books seldom make allusion to them, and the literature of the subject, so far as I have been able to discover, is meagre. During several years I have heard many such mnemonic expedients referred to in the dissecting room, and have jotted them down. Believing that these may be of benefit to some to whom they are not familiar, a few of the more important ones are here presented, together with several for which I alone am responsible.

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[1] An address delivered before the John Guitéras Medical Society of the University of Pennsylvania, December 4, 1893.

The ordinary mnemonic of the student commences with the same letters as the words to be memorized, and is often in the form of rhyme or couplet. At times the thought is drawn from a resemblance to certain objects; at other times the connection is more fancied than real.

The well-known but nonsensical lines—

"On old Olympian's piny top,
A fat-armed girl prepares a hop"—

constitute a mnemonic that will be recognized at once as a familiar friend by those who have learned the cranial nerves by this method. *O*n equals *o*lfactory; *o*ld, *o*ptic; *O*lympian's, *o*culo-motor; *p*iny, *p*athetic; *t*op, *t*rigeminal; *a*, *a*bducent; *f*at, *f*acial; *a*rmed, *a*uditory; *g*irl, *g*losso-pharyngeal; *p*repares, *p*neumogastric; *a*, spinal *a*ccessory; *h*op, *h*ypoglossal.

The branches of the axillary artery may be kept in mind by the word *salasap*: *s*, superior thoracic; *a*, *a*cromial thoracic; *l*, *l*ong thoracic; *a*, *a*lar thoracic; *s*, *s*ubscapular; *a*, *a*nterior circumflex; *p*, *p*osterior circumflex.[1]

The bones of the wrist are often remembered with difficulty, and a method of recalling the order of their arrangement in the joint without using the common rhyme employed for that purpose, whether from within, outward, or conversely, is by a simple mnemonic which I have never seen mentioned. *Rst* naturally recalls the word *wrist*. Now, if we commence on the *r*adial side *r*, the first bone will fairly enough commence with the letter *s*, and, as there are two bones commencing with *s*, following the descent of the alphabet, as in the letters *rst*, the *sc*aphoid would come first, and then the *se*milunar; the second row would commence with *t*, and again for the same reason the *t*rapez*i*um would appear before the *t*rapez*o*id.

Professor Leidy used to say in his lectures that the easiest way of remembering the kind of power possessed by the spinal nerves is by the word *amps; a* standing for *a*nterior, *m* equalling *m*otor nerves, *p* for *p*osterior, while *s* equals *s*ensory nerves. An elaboration of this method, suggested by one of my former office-students (now Dr. L. L. Hand), is the word *same*, which shows that the *s*ensory nerves are the *a*fferent, while the *m*otor nerves are easily remembered as being the *e*fferent.

The question, Where is the vagus in the chest? can be answered if it be remembered that in the alphabet three letters from *l*, *l*eft side, is the letter *o*, meaning "*o*ver," and three letters from the letter *r*, *r*ight side, comes *u*, meaning "*u*nder." This nerve, therefore, on the left side is "over,"—*i.e.*, anterior, while on the right side it is "under,"—*i.e.*, posterior.

The arrangement of the vein, artery, and nerve in the upper part of Scarpa's triangle is often deduced from the word *van;* naming from within outward, we then have *v*ein, *a*rtery, and *n*erve. In a converse manner the arrangement of the *t*endon, *a*rtery, and *n*erve above the elbow can be readily impressed upon the mind by reference to the word *tan*, while the initials of

[1] Heath's Anatomy.

the vessels entering into the hilum of the kidney spell *vau*, from before, backward,—*v*, vein, *a*, artery, and *u*, ureter.

Any student who has attempted to memorize the arrangement of the tendons, arteries, nerves, etc., at the ankle, will do well to remember the oft-repeated words, "*T*imothy *d*oth *v*ex *a*ll *v*ery *n*ervous *p*eople," in which *t* stands for *t*ibialis posticus; *d*, flexor longus *d*igitorum; vein, artery, vein, nerve (posterior tibial), and flexor longus *p*ollicis.

The relation of the ligaments of the scapula and shoulder-joint may be remembered by the letters *a*, *e*, in tra*p*ezoid, which is *a*nterior and *e*xternal to the conoid.[1]

Did you ever forget in studying the brain whether the caudate or lenticular nucleus in the corpus striatum was the higher? If so, recall that the *l*enticular is the *l*ower.

The varieties of club-foot are often difficult to remember, as confusion naturally arises whether it is in varus or valgus that the foot turns in, while equinus and calcaneus do not admit of this confusion, as one can readily remember the os calcis and equinus,—the former from the situation of the bone, and the latter from the fact that equinus means a "horse." For a long time I puzzled over a method of remembering this condition, when it occurred to me that the *r* of va*r*us, representing the *r*ight foot, and the *l* of va*l*gus representing the "*l*eft foot" might be made use of in this condition. If the left foot were chosen, the mnemonic worked correctly, for in varus of the left foot you would have it turned towards the right, while in valgus of the left foot you would have it turned towards the left; but supposing that by some mistake or other the student should unfortunately forget that he had chosen the left foot to help him out of his difficulty; the conditions would then be found to be reversed, and he would be apt to call varus, valgus, and valgus, varus. Now, fortunately, both of these words end in *s*, and the Latin for left is *sinistra;* with this in mind no doubt can arise but that the left foot is the one chosen for this aid to memory. One who is more familiar with the French than the Latin can choose for this purpose the word *gauche*, from the *g* of val*g*us, as it also denotes left. This mnemonic would also answer for the German language, as the word for *r*ight is *recht*, and that for *l*eft is *link*.

The situation of the valves of the heart has often been remembered by the use of the words "*M*artin *L*uther, *T*he *R*eformer," the *m*itral of course being on the *l*eft side and the *t*ricuspid on the *r*ight. Nay, more: having fixed this fact securely in your mind, it is now naturally suggested that there is no need of any confusion as to whether the right lung or the left has three lobes and the other two, for is not the tricuspid with its three leaflets on the right side, corresponding to the number of lobes normally to be found in the lung upon this side? And is not the mitral, or the bicuspid on the left, corresponding to the two lobes of the left lung?

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[1] Loc. cit.

He who has often had occasion to open a heart by Virchow's method knows that an incision is made directly in the centre of the pulmonary artery, for the reason that there is but one posterior cusp, and two anterior; this condition being reversed in the aorta, where there is but one anterior cusp and two posterior ones. You will at once see the method of remembering this: *p*ulmonary, *p*osterior, *a*orta, *a*nterior, one cusp each; and, in order not to get this condition reversed, though having made the incision will guide you, recall the fact that the order on top, from right to left as in reading, is 21, the time of coming of age.

I could name many more mnemonics, but those here cited will suffice to show you the advantage of making your own aids to memory, in order to fix many anatomical and surgical facts firmly in your minds.

A CASE OF CYSTIC OSTEO-CHONDRO-SARCOMA OF THE ILIUM, THE RESULT OF AN INJURY.

BY A. H. LEVINGS, M.D.,

Professor of Principles and Practice of Surgery and Clinical Surgery in the Wisconsin College of Physicians and Surgeons: Surgeon to the Presbyterian Hospital, Milwaukee.

Mr. A. E., aged twenty-four, was admitted to the Presbyterian Hospital on August 1, 1894, and gave the following history: He had always enjoyed excellent health until October, 1892, when one day, while riding in a passenger-car with knees resting on the back of the seat in front, he received a severe blow upon the right ilium just above the great trochanter. The blow pained him severely; he stated that he was never quite able to forget it, and thereafter was always conscious of having sustained a severe injury. He would often be awakened at night with pain, and at the end of three months a slight swelling was noticeable at the site of injury, just above the trochanter. This swelling has gradually increased up to the present time, and the patient is now quite lame.

Examination.—Patient of medium height, of good muscular development, and fairly well nourished, though pale. The right limb is slightly flexed; movements of hip-joint are somewhat restricted, though painless. Over the right ilium is a large growth the limits of which are not well defined; it has evidently infiltrated rather than displaced the adjacent structures. The skin is unaffected. The growth is bounded posteriorly by a line projected from the posterior border of the great trochanter upward and backward to the crest of the ilium; superiorly by the crest of ilium as far as the anterior superior spine; anteriorly by the inner border of the sartorius muscle for some five inches; inferiorly by a line running directly backward to just below the trochanter. It was apparent that the sartorius,

tensor vaginæ femoris, and glutæus medius and minimus muscles were implicated. The growth was soft, and at two points was more prominent than the rest, presenting indications of fluctuation. Diagnosis: Sarcoma from injury.

Operation took place the following day. An incision was made, commencing well behind the middle of the crest of the ilium and carried along the crest to the anterior superior spine, then along the inner border of the sartorius, for six inches, and then backward until it had crossed the femur below the trochanter. The flap, including skin and superficial fascia, being reflected backward, the entire growth was exposed. In front the sartorius and tensor vaginæ femoris formed a part of the growth, and were removed to the extent of the superficial incision. The rectus was free. The glutæus medius and minimus were infiltrated throughout, and were removed entire. It was seen that the growth had had its origin in the periosteum covering the ilium just above the trochanter, and had broken through the glutæus minimus as a solid mass of soft tissue about an inch and a half in diameter, and from there had spread out and infiltrated the surrounding structures. The affected periosteum was very much thickened, but readily separated from the bone and removed. The bone was eroded and was vigorously curetted. The capsule of the hip-joint was exposed but not opened, the gluteal artery was severed as it leaves the pelvis, but secured without difficulty. The skin flap was laid down, and united with interrupted stitches, provision having been made for drainage. The wound healed throughout by first intention, and the patient left the hospital August 26, just twenty-four days after the operation, able to walk well with a cane.

Microscopic Appearance of Tumor.—The periosteum removed was about one-fourth of an inch thick, having almost the firmness of leather; was largely made up of plates of bone and cartilage. Throughout the growth numerous plates of bone and cartilage and a few small cystic cavities were found. The microscope showed the soft infiltrated tissue to be composed of small round cells.

TWO INTERESTING CASES OF CŒLIOTOMY.[1]

BY DONALD MACRAE, M.D.,
Council Bluffs, Iowa.

THE following cases have been selected from a considerable list of abdominal sections, the one on account of its rarity, the other to show the astonishing amount of disease and trauma that may be recovered from by some patients. The abdominal surgeon is constantly a learner. Every case

[1] Read before the Missouri Valley Medical Society, September 20, 1894.

seems to be perfectly unique in its individuality. Instead of being able to make an accurate diagnosis before operation, in many cases the condition present is quite apt to be such that the true state of affairs is only slowly and gradually revealed by cautious dissection. In even the seemingly more simple condition of chronic appendicitis, it has been my lot to find and operate on cases in which all the sign-posts and guides so carefully localized by various authors were simply set at naught. The young doctor who would practise surgery will be much disappointed if he expects to find an accurate description of the conditions with which he actually meets.

The cases which I have to report were both operated upon in the hospital before the class of the Council Bluffs Medical College, and in the presence of most of the staff of the hospital.

Case I.—Mrs. A. gives an indefinite history of acute appendicitis about two years ago. After this she became pregnant and was delivered of a child at term. Her convalescence was marked by a fetid vaginal discharge and local and general septic symptoms. About a month after confinement two or three grape seeds were found in the vagina. Then the foul condition of the vagina was found to be due to a small amount of fæces, which in some way had found its way into the vagina. I was informed that her physician, Dr. Christensen, of this city, introduced a probe a short distance into a sinus, which commenced in the cervix, on its anterior aspect.

She was removed to the hospital and put upon a sustaining diet, with careful attention to cleansing the vagina. On May 11 she was operated upon. I made no examination of the case, as I had not seen the patient until she was placed upon the operating table. There was an element of doubt in regard to the portion of the intestine which communicated with the uterus. The history of appendicitis seemed to be vague, as no physician had seen her during the attack. In consequence, the expectation was that some difficulty might be encountered in ascertaining the true state of affairs. The patient was emaciated, the abdomen flaccid; therefore it was deemed best to open the abdomen in the median line. Upon sweeping the hand around the pelvic contents, it was readily found that the appendix had united itself to a mass of cicatricial tissue on the right lateral wall of the uterus, just below the broad ligament. The lumen of the appendix was continued by a sinus leading from its distal end through the cicatricial tissue to the side of and into the uterus. The appendix, though otherwise normal in appearance, was bound down firmly by close and dense adhesions, which were separated with difficulty. The parts were disturbed only in so far as was necessary to remove a portion of the appendix. Both ends of the appendix were tied off, a portion excised, and the serous coat carefully sutured over the free ends. The patient made an uneventful recovery. For a few days the odor from the vagina perceptibly increased, the rough handling of the appendix having forced its contents into the uterus. After a few days this ceased and never returned.

Case II.—Mrs. B. was attended at her home by my son, Dr. D. Macrae, Jr. She had high fever, abdominal distention and tympanites, great pain and distress, vomiting of green bilious matter, with extreme prostration,—in short, all the symptoms of a grave form of septic peritonitis. An ichorous and fetid bloody discharge from the vagina was also present, and a tendency to diarrhœa and tenesmus. This condition was probably of gonorrhœal origin, though it may possibly have been the result of forced abortion, which, however, the patient strenuously denied. She was removed to the hospital for the better and more constant care and attention which she would there receive. For many days our case seemed hopeless, the abdominal distention continued, the high fever did not abate, the pulse remained weak and very rapid,

cold sweats and griping pains were frequent; indeed, unless something more radical was attempted, it was evident that a few more days would terminate the scene. In this condition she was anæsthetized and removed to the operating table on March 16. A short median incision was made down to the peritoneum, except at a point about two inches below the umbilicus, where a small amount of cicatricial tissue bound together the deeper parts. When this was divided pus was projected forcibly from the opening, and several pints of matter were discharged. Sinuses were found which led to both inguinal regions. They met in the median line where we were fortunate enough to have opened. We contented ourselves with thoroughly washing out the sinuses, introducing drainage, and reducing the size of the wound by sutures. With the usual dressing the patient was removed to bed in very good shape. With constant cleansing of the pus-tracks and supporting treatment our patient revived and convalesced rapidly. The abdominal wound closed, and she left the hospital on May 4, much improved in health, and to all appearances cured. A radical operation was not done in her case, because the removal of such a large amount of pus would naturally tend to improve her condition, and an intraperitoneal opening, contaminated as it would be by such an amount of septic matter, would certainly be fatal. Besides, she was in no shape to stand further and more extended operative work. We postponed a more radical procedure until her condition should be such that some hope of a favorable result might be entertained. When she did leave the hospital, while we knew that some *causa morbi* was still present, she seemed so well that we hoped that *vis medicatrix naturæ* would, perhaps, assist in removing any remaining nidus of disease.

She returned the last week in June, much improved in appearance physically, but complaining of pain and swelling in her right side. We found a tumor, seemingly the size of a child's head, in the left ovarian region, movable and painful to touch. Her condition was such that household duties were irksome and almost impossible. On July 3 the abdomen was opened in the median line. The bladder, flattened out, adherent, blending intimately with the tissues of the abdominal wall, and extending up to the umbilicus, was inadvertently divided nearly the whole length of the incision. It was pushed down out of the way and an examination of the abdominal contents then made. The intestines were congested and matted together with firm adhesions, which formed many localized abscesses. The tumor, confined in the mass of adherent intestines, was intimately involved with them. These formed a conglomerate mass of uterus, tubes, intestines, and tumor so closely united that it seemed an utter impossibility to disengage one from the other. With care and patience the adhesions were all divided, and the tumor enucleated. It was an enormously dilated pus-tube. No ovaries were found. They seemed to have disintegrated in the inflammatory process, and were probably washed out with the detritus in the first operation of the case. The tumor was closely adherent to the rectum, and a portion of the rectal wall was thinned in removing it. When all the adherent surfaces were separated, and all the pus liberated, a large opening was made in the posterior cul-de-sac. Copious douches were used to clean out the abdominal cavity, and after the cleansing process was complete, through drainage was made from the lower end of the abdominal opening through the vagina. The bladder wall was then sutured, and finally the abdominal wound closed, except at its lower end. When the patient was returned to bed her condition was certainly not encouraging. She was cold, almost pulseless, and drenched in a clammy sweat. She rallied to a certain extent, however, but for three days she constantly vomited, was only semiconscious, and her appearance indicated that small prospects for her recovery remained. To add to her otherwise desperate condition, on the fourth day gas passed from her bowels through the abdominal opening, the next day fæces welled up into the abdominal wound. These escaped through an opening in the rectal wall, which had been rendered so thin when the tumor was torn from it. After this, each morn-

ing and evening, the cavity was washed out and thoroughly disinfected. The bladder wound did not heal up entirely, so that the dressings were saturated with urine. After the first week her condition commenced to improve; her appetite returned, and it shortly became evident that she intended to recover. Between the third and fourth weeks she was again anæsthetized, and the wound in the anterior wall of the rectum examined. The problem as to how to attain its closure was studied. Another abdominal incision seemed to be out of the question. Its closure, by suture, from the anus was an impossibility, for it could barely be reached with the finger. Finally, we caught each edge of the wound in the points of a pair of sharp bullet forceps. When these were locked the edges of the wound were found in perfect apposition. The bladder wound, with that in the abdominal wall, was freshened, and a few stitches introduced, thus entirely closing the abdomen. The forceps dropped off on the third day, and since then our patient has steadily improved, and is now a perfectly well woman. It is but right to say that the after-treatment was conducted by my son, whose experience would be an interesting study of itself. It is to his devoted attention and constant care that I am largely indebted in being able to report such an astonishing recovery.

A CLOTHING-CASE FOR THE ARMY AND NAVY AND A DEVICE FOR TRANSPORTING THE WOUNDED.[1]

BY W. THORNTON PARKER, M.D.,
Groveland, Mass.,
Formerly Acting Assistant Surgeon, United States Army; late Assistant Surgeon M. V. M.

Lord Howe, the distinguished soldier,[2] who lost his life while serving with Abercrombie in the ill-fated expedition against Ticonderoga, showed great practical knowledge in the care of his troops. He had induced all of the officers to dress like the common soldiers, warned by Braddock's defeat, where the officers were picked out as marks for the bullets. He persuaded the men to cut their hair short, and all were supplied with a pair of gaiters, like those worn by Indian Canadians, and called *mitusses*. *Their haversacks were rolled in a blanket.* They each had thirty pounds of meal, one pound of powder, four pounds of balls, besides their cartridge-boxes full. Their canteens were filled with wine. An army thus equipped would need no magazine for a month. Both officers and men mixed their own meal with a little water, and baked it in cakes by putting it on a flat stone, under the ashes, an arrangement which answered very well for a light expedition. The officers and men had only one shirt apiece, and did their own washing.

During the Franco-Prussian war many regiments transported their extra clothing wrapped in blankets or overcoats and worn slung over the left shoulder. The ends of the overcoat or blanket were secured by straps

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[1] Read before the International Medical Congress at Rome.

[2] A History of the French War, Johnson, p. 282.

or cords at the right side. The right arm and shoulder would therefore remain free for the carrying of the rifles, and easy movement for loading, aiming, firing, charging, and other exercises of the soldier could all be promptly executed.[1]

The different forms of knapsacks which I have examined, although remarkably similar in appearance in the German, Austrian, French, English, Dutch, Italian, Swiss, and American armies, are clumsy, heavy, and too fatiguing for the soldier's use, in peace even, much less useful in time of war. The necessity for the easy transportation of the soldier's kit, by the soldier, is often of the greatest importance when in actual warfare, and liable to long marches, especially when the quartermaster's train has failed, or when the rapid movement of armies is necessary, without the aid of wagons and horses. It was the experience of many army officers during the war of the Rebellion in the United States that soldiers, although provided with the best knapsacks which could be manufactured, invariably threw them away upon long marches, together with the clothing contained in them, rather than endure the fearful physical suffering which resulted from carrying them. Those who were determined to save some extra clothing did so by wrapping it up in the rolled blanket, or overcoat, which they wore over the left shoulder. The knapsack is especially undesirable, because its straps draw heavily against the muscles used in respiration. The tugging of the "pack" impedes the act of respiration very greatly, especially when the body is fatigued. The oppression caused by the weight of the knapsack and its interference with the normal breathing is so great that I have seen soldiers faint away, and even fall in ranks at Sunday morning inspection, after carrying the knapsack only a short time. The distress from the weight of the knapsack often causes a large per cent. of stragglers and sick men before the troops even reach the battle-field. An army is thereby deprived of many men of excellent courage and intelligence who would, by their presence, have aided much in action towards the general success, but whose physical resources were not equal to the dreadful "pack" on their backs. The pressure and contact of the knapsack heats and weakens that portion of the body against which it rests, and, after reaching camp or a halt, its removal exposes the soldier to additional chances of taking cold.

Any one who has witnessed the departure of troops for the war, in what is called heavy marching order, must have noticed countless men already nearly tired out and struggling to keep up appearances, and bear in a soldierly way their "pack." It was an easy matter to estimate how many, from the weight of the knapsack, must soon break down and become useless as fighting men. To remedy some of the defects and dangers which we have been considering, I have devised an "army clothing-case," which very many of the officers of the United States army, and also officers of

[1] Extract from my Manual Red-Cross Drill.

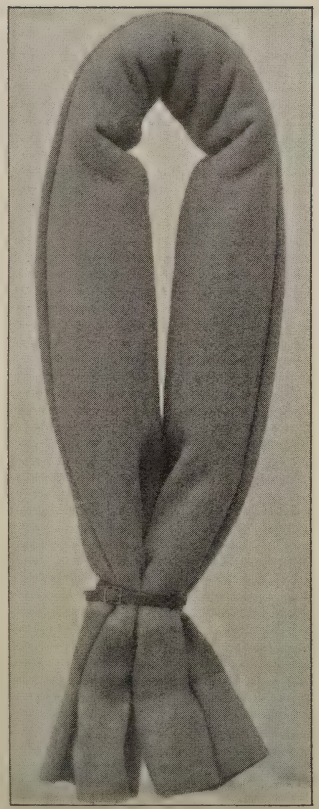


FIG. 1.—Blanket rolled up and tied.



FIG. 2.—Method of carrying blanket (without Dr. Parker's case) used in U. S. Army.



FIG. 3.—Dr. Parker's army clothing case.

the army of the Union during the war, have examined and highly approved of. The Newport Medical Society, at the regular monthly meeting held December 2, formally approved of this case, and have recommended it to all army boards for use instead of the knapsack.

The clothing-case of light canvas, invented by the author, weighs only eight and one-half ounces. Three of these can be readily fastened upon rifles, making an excellent stretcher for the transport of the wounded. The case is made of a strip of light canvas four feet six inches long, and sixteen or eighteen inches wide, folded longitudinally, so that a margin of two or more inches is left along one edge for a flap. It is divided transversely into three equal compartments by two sets of stitches. The margin is buttoned over on six buttons, the button-holes being on the flap and the buttons on the farther edge and reverse side of the case. Loops at either end enable the soldier to wear it securely at the ends without its being rolled in the blanket. The case will hold the ordinary soldier's kit, and it is intended to be worn in the rolled blanket, suspended from the left shoulder, giving the right arm full play, and allowing the utmost freedom in the performance of the most important exercises in the manual of arms.[1] (See illustration.)

The clothing-case does away with the necessity for the heavy and wearisome knapsack. Soldiers will not carry knapsacks, but the clothing-case can be carried for many days without fatigue. The loops already mentioned can be secured by a drawn cord or strap, and the rifles slipped between the folds thus formed will make a most serviceable stretcher.

By direction of the General-in-Chief of the United States army a board of officers was ordered to examine into the merits of this clothing-case in 1890, at Fort Adams, Newport, R. I., and, after careful examination and practical tests, reported favorably for its adoption by the United States army in time of war. It is not suited for "piping times of peace," when show and pomp are more often considered, but for actual service in actual campaigning it is considered the best method. When the soldier reaches a field or post hospital, or is being transported in an ambulance, his clothing-case will provide, when folded, a most welcome and useful pillow. Such clothing-cases could be used either when filled or emptied; if used when the cases are full, just as good a stretcher can be made; and the effects of the soldier, his changes of clothing, etc., are brought directly to the hospital.

Once more it is submitted to the Congress of Medical Men of all Nations, with the hope that it may receive more general commendation and be put to practical test as to its actual value in the field of war.

Anything which lessens the hardships of marching and fighting, and increases the real comfort of soldiers, whether in health or when wounded or invalided, is worthy of the best efforts of the medical profession.

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[1] *Vide* Army and Navy Register, August 15, 1885; Jour. Amer. Med. Association, March 6, 1886; Reference Handbook Med. Science, vol. cvii. p. 722.

For transport of wounded in the field during active service, I would suggest a light, strong framework, to the cross-pins of which strong netting could be attached. This would be light, and would not be so warm as a canvas or blanket stretcher. Common net-cord hammocks could be issued for stretcher use, and the ends could be placed over the left shoulder of the forward man, and over the right shoulder of the rear man, and held securely at the side. This would do away with any pole, and in many cases would be light, cool, and comfortable. Such hammock-stretchers would take very little room in transportation. Where the regular canvas-stretcher is not obtainable, blankets, knapsacks, overcoats, dresscoats, and trousers can with poles or rifles be made into excellent stretchers.

Referring once more to the clothing-case already described, it has occurred to me that for Red-Cross sergeants on the field no better case could be devised for carrying the necessary instruments and appliances to be used in first aid.

The knapsacks, bags, and haversacks, in use in the hospital corps of the European and American armies, are clumsy and very tiresome. The constant stooping and rising positions, assumed by the medical attendants in ministering to the sick, are made doubly irksome by the clumsy and heavy bags and haversacks suspended by a strap, which often cuts deeply into the shoulder of the wearer.

I have devised a case for a Red-Cross sergeant, made in the same fashion but of different material from that used by the soldiers and sailors, who wear theirs inside the rolled blanket. This case is to be made of brown water-proof cloth, secured at the right side by two strong straps. When required for use it can be quickly unslung and opened, and as quickly closed and slung into position again.

The contents are as follows: One hypodermic needle and rubber-stoppered bottle, containing Magendie's solution, morphia, one-half pound absorbent cotton in a flat package; six woven bandages, antiseptic; six first-aid triangular bandages; one case isinglass plaster; one inch tape; one package, in flat wooden box, surgeon's adhesive plaster; three sponges in water-proof bag; two tourniquets, field; two tourniquets, Esmarch; one tin box wax candles and matches, or folding lantern; one Red-Cross sergeant's dressing-case.

This case will be found of great practical convenience, and can be furnished at reasonable expense, and much below the cost of hospital knapsack, bags, and haversacks already in use.[1]

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[1] Boston Med. and Surg. Journal, March 31, 1888.



Photograph taken after the operation for exstrophy of the bladder and before the operation for left inguinal hernia.

A CASE OF EXSTROPHY OF THE BLADDER, WITH OPERATION.

SERVICE OF DR. JOHN ASHHURST, JR., AT THE UNIVERSITY HOSPITAL, PHILADELPHIA.

BY J. H. GIRVIN, M.D., AND J. H. JOPSON, M.D.,

Resident Surgeons in the University Hospital.

Harry B., aged three years, was brought to the hospital in November, 1893, presenting a well-marked case of exstrophy of the bladder, with a very large inguinal hernia on the left side. Operation was decided upon, and Richard's method of forming the flaps was selected. A large flap was first dissected from the abdominal wall, from above downward, and inverted over the exposed mucous membrane, the skin forming the vesical surface of the flap. A crescent-shaped flap, left attached at both ends, was next cut from the scrotum, drawn saddlewise above the penis, and secured with its skin surface outward and its raw surface in contact with that of the primary inverted flap, which it was made to cover. Both flaps were secured by numerous silkworm-gut sutures. The raw surfaces left by the denudation of the abdominal wall and scrotum were next covered, the edges of the abdominal wound being brought together by buried and superficial sutures of silver wire. The scrotal surface was treated in the same manner, silkworm-gut sutures being used, the object being, as in the elder Pancoast's and Maury's operations, to reduce the hernia to such a size that it could be held by a truss. The knees were fastened together and flexed over a pillow, and kept in that position till union was complete. There was some shock following the operation, but the child soon rallied. The flaps united well, and the exstrophy was entirely relieved. After the child was allowed to be up it was found that the hernia, although much reduced in size, was still too large to be held by a truss. The patient was therefore sent home in January, 1894, to recuperate, with directions that he be brought back in six weeks. In March he was readmitted, and an operation for radical cure, somewhat after the method of Macewen, was performed. Recovery from this second operation was rapid and uncomplicated, and three weeks later he was discharged, a truss being first applied. The patient is now in perfect health, running around, and seems to suffer little inconvenience. The photograph was taken in the interval between the two operations.

CLINICAL LECTURES.

THE TREATMENT OF NERVOUS TROUBLES IN DYSPEPTIC PATIENTS.[1]

CLINICAL LECTURE DELIVERED IN THE NECKER HOSPITAL.

BY DR. CUFFER,
Physician to the Necker Hospital, Paris.

GENTLEMEN,—We ask your attention to-day to four of our patients now in the hospital, who were admitted for gastric troubles. These patients present many symptoms in common, but we would like to insist upon the nervous manifestations that are attached to their cases, and explain their treatment.

In bed number one is a man, thirty years of age, who is or was a dramatic author by occupation, and, therefore, always short of money and exposed to disappointments, and this has so affected his disposition that he is a confirmed neurasthenic. He has a dilated stomach, which is easily detected by percussion and by a fulness in the epigastric region. There is no pyrosis, and fluid introduced into the stomach comes out quite clear and without any special odor. He complains of pain near the pylorus some two or three hours after eating, which begins with a sensation of constriction, then suddenly ceases, and he feels all right again. The same sensation of constriction is felt across the transverse colon, and is evidently of the same origin as the dilatation of the stomach.

This pyloric crisis has attracted my attention for a long time. It is found in many neurasthenics, and is evidently due to painful spasm of the pylorus. This is proved by the sudden appearance and just as sudden disappearance of the pain, and the immediate relief felt by the patient. Neuralgic troubles far from the seat of this lesion are also found in this patient, and they are accompanied by local fluxions. On the left side of the face he has neuralgic manifestations of the fifth pair, with pain, redness of the face, and weeping eyes. He has also an intercostal neuralgia of the right side, which is brought on by indigestion. If auscultation is made over this spot, friction sounds and pleural râles are heard. Another very interesting fluxion occurred in this patient. A considerable effusion into the abdomen took place with great rapidity within twenty-four hours,

[1] Translated by Thomas Linn, M.D., of Nice, France.

and we thought of a pleuro-peritonitis of a tuberculous nature; but a careful examination of the abdomen, chest, and liver did not give the slightest signs that would explain the trouble. It was a fluxion into the peritoneum of a vaso-motor order, and with perfect inundation of the serous membrane.

These manifestations are quite common in gastric nervous cases. How can they be explained? An old adage—*Ibi dolor, ibi fluxus*—will give the explanation. It is not necessary to find a reason for these troubles in toxines and ptomaïnes whose presence is due to absorption of putrid substances by the stomach. It is simply neuralgia with congestion. We have proved this by washing out the stomach, and by finding its contents free from fermentation.

The second patient, in bed number fourteen, is thirty-six years of age, and has also neurasthenic symptoms and dilatation of the stomach without pyrosis or fermentation. Neuralgic symptoms are present, but without the signs of fluxion. He has a neuralgia of the whole of the spinal column with an exacerbation in the superior portion. The remaining symptoms are vertigo, dyspnœa, with some cardiac difficulty, and a retrosternal murmur quite intense in character.

Let us now compare these two patients with two gastric cases, in beds number two and ten, in the Vernois ward. They are alcoholics, and have been intoxicated for some time with ethylic poisons. They have dilated stomachs, abnormal prominence of the epigastric region, the succussion sound is very distinct, and there is regurgitation and vomiting of acid, partly-digested foods. So they have atony of the stomach and hyperhydrochloridia, and during digestion have intense dyspnœa and palpitation of the heart. There are no neuralgic symptoms nor pyloric spasms.

In the first two patients we find a gastric dilatation due to a neurasthenic condition, while in the second two the dilatation was caused by a gastritis of alcoholic origin, and by deeper lesions, for, according to Stokes's law, there is a paresis of muscles subjacent to an inflamed mucous membrane. We see, therefore, a notable difference in the pathogenesis of the nervous symptoms in these cases. In the first two the phenomena are of a passing nature and spasmodic in character. In the second two they are due to an alteration of the nerves.

Professor Potain has shown that the cardiac symptoms in gastric dilatation are phenomena of a reflex order. There is no real lesion of the heart. An examination of the heart shows an exaggerated action of the pulmonary valves, which Professor Potain finds to be due to increased tension in the pulmonary artery, caused by spasm of the branches of the artery. This spasm is a reflex from the stomach.

These circulatory troubles prevent hæmatosis, and dyspnœa follows; or the increased tension brings on a dilatation of the right heart: and if these troubles are renewed every time that digestion takes place, we can easily understand that the passing dilatation will soon become a permanent one.

These cardiac difficulties will persist for a long time, and if the gastric troubles are not amended, more serious lesions will appear,—a tricuspid murmur, tricuspid insufficiency, stasis in the inferior and superior venæ cavæ, and a jugular pulse with congestion of the liver and kidneys are found in some cases, but are rare.

There is a sign that will help you in making a diagnosis of this lesion in gastric cases where nephritis is present. It is a *bruit de galop* which is heard on the right side and has a retrosternal localization. It is similar to the murmur heard in nephritis, but that is found on the left side. The important symptom for diagnosis, then, is a *right* retrosternal murmur.

The late Professor Peter studied the nervous symptoms in gastric cases from a different point. He found that they had cerebral signs. Vertigo he attributed to spasm of the cerebral arteries; aphasia, which lasts during digestion; paralysis, hemiplegia, and other cerebral phenomena arise from these gastric troubles, and if frequently repeated may become permanent.

Nerve lesions of the medulla of gastric origin have been well studied by Dr. Huchard. They begin as a neuritis of the pneumogastric nerve, which finally reaches the medulla, and then becomes a permanent lesion. He has shown "false asthma" and "false angina pectoris" from this cause.

The nervous symptoms found in the last two cases are due to gastritis, which is well understood.

The treatment of gastric neurasthenia consists in stimulation of the nervous system. This is done—1. By friction. 2. By hydrotherapy. 3. By statical electricity. 4. By the use of strychnine.

The local treatment consists of washing out the stomach with water charged with quassia or nux vomica. This has the effect of contracting the stomach.

Pyloric spasm may be immediately arrested by throwing a spray of ether over the pyloric region. In this indirect manner all the nervous manifestations can be met.

In the last two cases the treatment consists in washing out the stomach with alkaline water, and the administration of bicarbonate of sodium. Tincture of nux vomica, ten to twenty drops a day, and benzo-naphthol in wafers of 0.20 to 0.25 may be given to stimulate the fibres of the stomach. For local treatment, vesication or cauterization may be used over the region of the stomach, and also on the back of the neck to prevent the reflex action on the medulla.

REVIEW OF MEDICINE.

MEDICINE.

IN CHARGE OF JUDSON DALAND, M.D. (Univ. Penn.),

Instructor in Clinical Medicine and Lecturer on Physical Diagnosis in the University of Pennsylvania
Assistant Physician to the University Hospital; Physician to the Philadelphia Hospital;
Fellow of the College of Physicians of Philadelphia.

Fatal Peritonitis Following Orchitis Due to Mumps. (*Gazette hebdomadaire de médecine et de chirurgie*, August 12, 1894.)

Mr. Hornus publishes the report of a case of double orchitis occurring in a soldier aged twenty-two, during an epidemic of mumps. It was not due to gonorrhœa, and there was no venereal infection. It came on with a few colic-like pains, followed by frequent movements of the bowels. Both testicles were equally affected. The temperature was 103.1° F. On the second day the patient developed peritonitis, of which he died in forty-eight hours. The autopsy showed that the testicles were transformed into collections of pus, with no trace of seminiferous tubules. The spermatic cords were bathed with pus, which continued beyond the inguinal canal. The intestinal coils were covered with purulent and fibrinous deposits. The remaining organs were normal.—*New York Medical Journal*, September 1, 1894.

On the Pathology of Arterio-Sclerosis. (*American Journal of the Medical Sciences*, September, 1894.) By F. Parkes Weber, M.D.

After referring to a description of this affection by Sir William Gull and Dr. Sutton in 1872, the writer goes on to state that the hyaline appearance of the fibroid change which they described was due to the acidulated glycerin in which their microscopical specimens were prepared. These observers considered that the change was situated chiefly in the tunica externa, whereas most recent observers have considered the primary change as an accumulation of cells in the interna. As both views have their upholders, the author advises the term "arteritis" or "arteritis obliterans" in preference to endarteritis, and even these words are objected to because the process is frequently not proven to be inflammatory. The author states that the common accepted causes are heredity, age, syphilis, arthritism, and the uric acid diathesis, and states that Huchard includes alcohol, tobacco, lead, and the acute and chronic diseases, such as typhoid, small-pox, malaria, etc., whereas Lancereaux maintains that this disease is of nervous origin.

After a very interesting discussion of these causes, the author concludes that the etiology of arterio-capillary fibrosis is still uncertain, and ventures the suggestion that it may be due to excess or irregular physical or mental labor, associated with the habitual taking of too much or too little food.

Purpura Hæmorrhagica, Complicating Lobar Pneumonia. (*Archives of Pediatrics*, August, 1894.) By I. M. Snow, M.D., of Buffalo.

The author reports a very interesting case occurring in a girl-baby. The author describes the purpuric spots as small, livid blotches, appearing on the abdomen, above the umbilicus, and thence spreading rapidly, covering the whole anterior portion of the trunk in the course of two days. There was an erythematous discoloration of the back. At first the patient suffered from chronic indigestion and bronchitis, and, during the purpuric outbreak, developed an acute attack of vomiting and diarrhœa. The temperature was 97° F. In eleven days the patient died. The autopsy showed an enlarged and fatty liver and lobar pneumonia of the upper right lung. No visceral hemorrhages. The author is inclined to the view that purpura is an acute infection caused by the pneumococcus or by secondary infection.

Sterile Pus in Hepatic Abscess. (*Semaine Médicale*, June 5, 1894.)

Mr. Rendu reports a case of multiple abscess of the liver associated with numerous partly cicatrized ulcers of the cæcum. The pus from the hepatic abscess contained chains of cocci exactly resembling the streptococcus pyogenes. Other specimens of this pus were subjected to culture, but they could not be cultivated. The author states that it is difficult to state why the microbes may thus lose their virulence and become sterile; but it may be reasonably asked whether the liver, which in a healthy state serves as filter for toxins, does not exert a salutary action upon the pyæmic infarcts. —*Universal Medical Journal*, August, 1894.

Malta Fever. (*Annales de l'Institut Pasteur*, August, 1893.) By Louis Hughes, A.M.S.

Hughes has studied clinically and bacteriologically the peculiar fever met with at Malta and other Mediterranean ports. He states that it resembles, in some respects, typhoid fever, and in others malarial fever, but, nevertheless, it is a distinct affection, associated with a peculiar microbe differing from Eberth's bacillus, and unassociated with the plasmodium of Laveran. The temperature is irregular. There are periods of remittent fever, lasting one or two weeks. The mortality is about two per cent., and the mean duration of stay in hospital is seventy to ninety days. The micrococcus Melitensis, which is recognizable morphologically and by culture, has been found in the organs eight times by Bruce, in two cases by Gipps, and in eleven cases by the author. Bruce in two cases and the author in four cases reproduced the disease in monkeys by inoculations of the pure cultures of the micrococcus Melitensis.—*American Journal of the Medical Sciences*, September, 1894.

THERAPEUTICS.

IN CHARGE OF ALEXANDER D. BLACKADER, B.A., M.D.,
Professor of Therapeutics, McGill University, Montreal, Canada.

ASSISTED BY

D. I. EVANS, M.D.

The Serum Therapeutics of Diphtheria. (*Lancet*, September 22, 1894.) By Professor E. Roux.

In this paper, which was read before the International Congress of Hygiene, at Budapesth, the writer, referring to the importance of the antitoxine method of treatment in tetanus and diphtheria, points out the difference in their available usefulness. Tetanus is only recognized when the disease has entered upon its last phase,—that is to say, when the poisoning, as evidenced by the appearance of the muscular contractions, has already taken place. In diphtheria we are warned by the presence of false membranes in the throat, and we may employ our remedies before the later symptoms of poisoning show themselves. He corroborates the results obtained by Behring and his collaborators in their serum treatment of diphtheria, and describes in a very interesting manner the mode of preparation and the testing of this therapeutic serum, and then compares the results at *l'Hôpital des Enfants Malades*, where the serum was used, with (1) the previous statistics of the hospital; and (2) the statistics of another hospital in Paris, receiving children suffering from diphtheria,—*l'Hôpital Trousseau*. During the past four years the mean mortality of anginose cases at *l'Hôpital des Enfants Malades* was 33.94 per cent. During the time of serum treatment from February to July, 1894, the mortality has been twelve per cent. During the same time at *l'Hôpital Trousseau* it was, without the use of serum, thirty-two per cent. Of croupous cases, during the past four years, the mean mortality was 73.19 per cent. During the months of serum treatment it was only forty-nine per cent. at *l'Hôpital des Enfants Malades*, while for the same period at *l'Hôpital Trousseau* it was, without the use of serum, eighty-six per cent. To all children immediately on entrance into the hospital, twenty cubic centimetres of serum were given at one insertion under the skin of the side of the abdomen. If the Klebs-Löffler bacillus was not found in the exudate, on examination, the injection was not repeated. One hundred and twenty-eight children affected with various forms of angina were thus treated without the least inconvenience, and, although exposed to the diphtheritic infection for some days, did not contract the disease. In those cases determined to be true diphtheria, twenty-four hours after the first injection a second of twenty cubic centimetres or ten cubic centimetres was given, and this was found generally sufficient to complete the cure. The pulse and temperature were the guide to future renewals of the injection. So long as the temperature did not fall below 38° C. the curative effect was not complete, and should be hastened by a supplementary

injection. During convalescence eruptions resembling urticaria, and due to the serum, sometimes made their appearance. The principal modifications on the course of the disease, due to the serum, are stated to be as follows: The general condition remains good, or improves quickly, provided the treatment be commenced sufficiently early. The typical pale and leaden faces are scarcely seen in the wards; the expression of the children is more lively and cheerful. The duration of the disease is curtailed; the appetite quickly recovers; the wasting is slight, and complications and sequelæ are more rare. The false membrane ceases to grow within twenty-four hours of the first injection. The temperature falls quickly; in the milder cases defervescence is abrupt, but in the graver forms the fall commences only after the second or third dose, and takes place by lysis. With regard to local treatment, the use of all caustic and poisonous substances is absolutely proscribed. A wash of boracic water, or very weak Labarraque's solution, two or three times a day, is all that is necessary.

The Effect of Creosote on the Virulence of the Tubercle Bacillus. (*British Medical Journal*, September 22, 1894.) By W. Kington Fyffe, M.B. (Cantab.).

In this paper the writer gives us the results he obtained from an investigation, undertaken to decide whether the value of creosote, as a remedy in phthisis, was due to any restraining action exercised over the growth of the bacillus, or simply to its power of improving digestion, and so aiding assimilation. At Victoria Park Hospital creosote is used in one of three ways, (1) as an inhalation; (2) by the mouth; (3) by means of a creosote chamber. The latter method consists in placing a patient in a small room, in which creosote is heated till the air is saturated with the vapor. The method adopted by the writer was that recommended by Professor Delapine,—namely, that of injecting tuberculous sputum into the leg of a guinea-pig, and noting the time it lived, and the extent of lesion at the time of death. The conclusions he arrived at are summed up as follows: (1) In those patients who were taking creosote simply as an inhalation, no effect on the virulence of the bacilli was noted. (2) In those to whom the creosote was administered by the mouth in doses ranging from two to twelve minims three times a day, a slight diminution in virulence was noted when the dose was small, while when larger amounts were administered the diminution was well marked. (3) In those to whom the creosote was administered by the third method, the number of cases examined was only three, and therefore an absolute dictum could hardly be given, yet the animals lived longer after the injection than in any other instance, and died in the end from cellulitis, set up by the injections.

Apocynum Cannabinum as a Cardio-Kinetic and Diuretic. (*British Medical Journal*, September 22, 1894.)

This drug, which has been known for some years as an emetic and

cathartic, and has been employed as a remedy in dropsy, was examined by Schmiedeberg in 1883, and was found to contain an amorphous substance, apocynin, and a glucoside, apocyneine; the first soluble in alcohol, not in water; the second soluble easily in water. Petteruti and Somma (*Il Policlinico*, No. 10–14, May to July, 1894) have experimented with the drug in the form of a decoction and of a tincture. They found that the action of the decoction is exercised chiefly on the stomach and intestines, producing first catharsis and then emesis. Should this action be postponed, increased diuresis and acceleration of the heart-beat may be noticed. The tincture, however, was found free from gastro-intestinal irritant effects, even when large doses were employed, while distinct cardio-kinetic effects were obtained. Sixty to ninety minims of a tincture having a strength of one in ten were given daily. Marked diuresis was produced which was not accompanied by albuminuria. The drug appeared to act as a diuretic without irritating the renal epithelium. Sphygmographic tracings showed a considerable increase in the force of the pulse, the rapidity of which was sometimes markedly diminished. The change in rapidity was not, however, a constant effect. Irregularity in rhythm was sometimes noted. They considered the tincture as likely to prove useful in valvular lesions of the heart, and especially valuable in cases of œdema and dyspnœa, while it has the advantage over the other cardiac drugs that it does not irritate the primæ viæ, and that it may be used without danger for a long time.

A Case of Leucocythæmia apparently cured by Bone-Marrow. (*Lancet*, September 22, 1894.) By W. G. Bigger, M.D.

The writer reports a lad, aged twelve years, who for the previous six years had been under observation, suffering from splenic enlargement with anæmic symptoms, but who had previously been much relieved by treatment with arsenic and iron. Two months ago the disease acquired a more active character. The spleen became much larger, and completely filled the left half of the abdomen, while at the same time there were diarrhœa, pyrexia, and frequent attacks of epistaxis. He was now fed on raw bone-marrow spread on thin slices of bread. Under this treatment the improvement in the boy's condition, after the first week, was marvellous. The spleen diminished in size, and the anæmia rapidly decreased. After a month's treatment the boy was reported as being better than ever before, while the spleen had receded, and was at that time only felt about three inches below the ribs.

Oxalic Acid, in Combination with Iron and Manganese Peptonates, as an Emmenagogue in Chlorosis. (*Medical News*, September 29, 1894.) By H. C. Bloom, M.D.

This is a second report by Dr. Bloom on the value of oxalic acid as an emmenagogue. Since his previous paper he has used the drug in upward of one hundred cases of amenorrhœa, and, while it occasionally failed him, his experience still led him to regard it as the surest and safest emmenagogue

we have. He thought it also reliable under certain conditions as an oxytocic. In chlorosis additional therapeutic measures were necessary, looking towards the establishment of a better condition in the blood. Frequently, however, even when the anæmia disappears, the amenorrhœa may persist. In such cases the combination of the ferruginous preparation with oxalic acid has yielded in his experience the best results. His formula is as follows:

℞ Ferri peptonat., gr. xii;
Mangani peptonat., gr. ii;
Acid. oxalic., C. P., gr. ii;
Alcoholis, ʒiii;
Aquæ, q. s. ad ℥iv.—M.
Sig.—Two drachms *ter in die.*

SURGERY.

IN CHARGE OF HENRY R. WHARTON, M.D.,

Demonstrator of Surgery and Lecturer on Surgical Diseases of Children in the University of Pennsylvania; Surgeon to the Presbyterian Hospital, the Methodist Episcopal Hospital, and the Children's Hospital; Consulting Surgeon to the Presbyterian Orphanage.

AND

JOSEPH P. TUNIS, A.B., M.D.,

Assistant Demonstrator of Surgery in the University of Pennsylvania; Surgeon to the Dispensaries of the Presbyterian, Methodist Episcopal, and Children's Hospitals.

On the Reduction of Subcoracoid Dislocation of the Humerus.

(*Intercolonial Quarterly Journal of Medicine and Surgery*, August, 1894.) By R. Hamilton Russell, F.R.C.S. (Eng.), of Melbourne, Victoria.

The writer employs the following method: The patient being comfortably placed in a recumbent position, the surgeon lightly takes the wrist on the injured side, raises the arm just off the bed, and pauses for a few seconds. He next proceeds with a movement so slow as to be almost imperceptible to abduct the arm until it is extended above the shoulder at an angle of forty-five degrees with the axis of the trunk, but in the same plane. Two or three minutes should have been taken in this procedure, the movements having been made not only slowly but perfectly steadily, remembering that any suddenness of movement will assuredly call forth muscular contraction in response; there must also have been, hitherto, an absence of traction on the arm. Now, however, traction must be employed for the first time, but with the same insidiousness as to previous movements, and the humerus will be so easily drawn into the glenoid cavity that both patient and surgeon may be deceived as to the reduction having taken place. The writer has had opportunity of trying this method in several cases, and has not yet failed to reduce the dislocation, without chloroform and without inflicting the slightest pain on the patient. The writer considers the most appropriate designation would be to call this method reduction by "stealth."

The author suggests that this plan might be tried in the rarer dislocations of the shoulder and in dislocations of the hip.

Case of Jacksonian Epilepsy cured by Trephining. (*Berliner klinische Wochenschrift*, September 10, 1894.) By E. Leyden, M.D.

Leyden reports a case, in detail, in which a traumatic (Jacksonian) epilepsy seems to have been healed by trephining. The original small lesion in the bone of the skull was exactly above the right cortical centre of the left lower limb. The time elapsing between the original injury and the first epileptic attack was about twenty-four years. Notwithstanding the long time which had intervened, the clinical analysis of the epileptic symptoms placed the lesion with certainty in the motor cortical region. Though but slight anatomical changes were found at the time of the trephining, there occurred four weeks after the operation a marked improvement, which, in the course of four and a half months, ended in nearly complete recovery. A slight limp of the left leg alone remains at the present time.

Nerve-Suturing; Neurorrhaphy; Nerve-Grafting. (*Medical News*, October 6, 1894.) By De Forest Willard, M.D., Ph.D., of Philadelphia.

After reviewing the literature upon this subject, the author critically analyzes the histories of one hundred and seventeen cases of primary suture and one hundred and thirty cases of the secondary variety which he has had collected for him. The injuries to the nerves are found to be much more common in the male, and in the upper extremities. The greatest distance in which union took place in the primary cases was two inches; in the secondary, four inches. Sensation returned as early as the first day and as late as one and a half years in the primary suture, and the next day and after two years in the secondary suture. Motion was found to occur as early as the next day, whereas it might be delayed as late as a year in primary suture, while in the secondary suture it was postponed in two of the cases for three years.

Willard concludes that: 1. A sufficient number of operations of this character have been done to show that fears of tetanus are groundless. 2. Errors in reporting successful cases are often due to vicarious or substitutive functions which other nerves of the same part may assume. 3. Failure, in some cases, is evidently due to secondary degeneration of the motor cells in the spinal cord, though the sutured nerve may have united well. 4. Immediate suture of a divided nerve offers a good prognosis of restoration of sensation and motion. 5. Clean end-to-end suture, and a careful freeing of the ends, for some distance, from cicatricial tissue, affords the best chance for a restoration of function. 6. The best suture-material is fine chromicized catgut, inserted, by means of a small round needle, directly through the body and sheath of the nerve. Two sutures crossing at right angles are usually advisable. During the healing process the part should be completely at rest and nerve relaxed, if possible. 7. Good results may be attained

by suturing end of a widely separated nerve-trunk to freshened surface of a neighboring nerve or muscle. 8. Secondary suture offers good hope of success, and should be attempted, even years after the accident. Repeated operations may ultimately succeed. 9. In great loss of nerve-substance, grafting a nerve from a freshly-amputated human limb, or from a *young* animal, gives a better result than the splice-operation of splitting the ends and turning flaps into the gap. 10. Decalcified bone tubes are so rapidly absorbed as to be of little service in uniting divided nerves. 11. Restoration of function may take place months after the operation. Sensation returns first. 12. Though the distal portion of a divided nerve rapidly degenerates, as does an interposed graft, transmission of function is possible and regeneration may take place both as regards sensation and motion.

Experimental Reunion of the transversely divided Vas Deferens. (*Medical News*, June 30, 1894.) By Weller Van Hook, A.B., M.D., of Chicago.

After cutting the vas deferens in a large New Foundland dog, a tight ligature was applied one-fourth inch from the end of the proximal fragment, and a longitudinal incision was made in the wall of the duct one-fourth inch above the point of ligation, opening the lumen. The distal end was trimmed to a point, like sharpening a lead-pencil, and an incision one-eighth inch long was made in the pointed end to secure a patulous opening. Two fine needles, armed with a single thread, were then passed from within outward through this portion of the vas deferens, and from within outward in the wall of the vas deferens, above the incision in the proximal end. The distal end was then drawn into the opening in the proximal end, and the suture tied. The wound was then closed. The autopsy showed,—

1. A normal testicle on the side experimented on. 2. No accumulation of testicular fluid below the site of the operation. 3. Perfect patency of the duct. 4. Complete continuity of the mucosa. 5. Firm union of the muscular walls.

The operation is considered by Van Hook to be feasible on the human subject.

The Present Position of the Treatment of Hydatid Disease in Australia. (*Australian Medical Journal*, August 20, 1894.) By William Gardner, M.D., C.M. (Glas.).

From a large personal experience in Australia where hydatid disease is so common, and as a result of observation of the practice of others, this author has arrived at the following conclusions:

"1. It must be admitted that simple cysts of the liver are occasionally cured by tapping or aspiration, but, inasmuch as it cannot be told beforehand whether the cysts to be dealt with are simple or not, tapping *is contra-indicated in almost all hydatids*, on account of (*a*) the risk of death from

shock, and (*b*) the large number of cases which have ultimately to be subjected to a radical operation, and are by those preliminary aspirations and tappings rendered less favorable cases for the major operation. The only exceptions I would admit are in cases of advanced pregnancy or in the presence of grave organic disease, which in its nature is necessarily fatal. In these cases, tapping or aspiration of hydatid cysts may be resorted to as a palliative measure.

"2. Radical operation by incision and immediate removal of the parasite is indicated in the following cases:

"(*a*) In all hydatids of the external surfaces of the body, the fibrous sac should be dissected out like a tumor, and the wound closed, except in cases where scarring is of importance, as in the breast and in the neck. In these a small opening may be made, the contents removed, and the wound in the cyst sewn up or drained. (*b*) In all unruptured hydatids of the lung a radical operation should be immediately performed, on account of the great risk accompanying spontaneous rupture, which is frequently caused by the removal of even an hypodermic syringeful of fluid. (*c*) In all cases of spontaneously ruptured hydatids of the lung, in which the patient has escaped the risks of flooding the lungs or blocking the glottis with membrane, we may reasonably wait, but if a suppurating and freely secreting cavity be left, the interests of the patient are best consulted by excision of ribs, and drainage at the lowest point. (*d*) All hydatids of the abdomen should be subjected to some form of radical operation, whether suppurating or not. In the case of the spleen and the kidney, there are cases in which it is necessary to perform splenectomy or nephrectomy. (*e*) The treatment of hydatids of the brain, spinal canal, and orbit should be radical, but as I have seen only one case of each myself, and as our whole Australian experience numbers only six reported cases in the brain, and a smaller number in the spinal canal and orbit, we are not yet in a position to speak definitely on the subject. (*f*) Of the operations for abdominal hydatids, in which drainage is to form a part of the treatment, the best is Volkmann's, with iodoform gauze plugging, for the practitioner who cannot obtain skilled assistance. When assistance can be obtained, my modification of the operation is best,—viz., stitching the cyst to the parietal peritoneum all round first, then emptying of the cyst, and fixing it to the peritoneum and muscles, and douching until all the contents are removed. (*g*) Of the operations for abdominal hydatids, in which drainage forms no part of the treatment, I think that complete removal of the fibrous sac can in rare cases be done, especially when the cyst is attached to the omentum, but that in Bond's operation, my modification of fixing the sac to the peritoneum on each side by one stitch should be adopted wherever possible. Whenever the cyst cannot be brought up to the abdominal wound, it must be emptied and all fluid removed, then the hole in the sac should be carefully sewn up, and the cyst dropped into the abdomen.

"3. Tapping may very rarely be indicated in cases of doubtful diag-

nosis, to be followed by immediate operation if characteristic fluid be obtained.

"The above conclusions, although presented shortly and dogmatically, represent as nearly as possible the results of the practice of the majority of surgeons in Australia who have devoted most attention to this disease."

The late Dr. Davies Thomas, the author of an elaborate work on hydatid disease, is said by the writer to have held views similar to his own.

Nine Cases of Contusion and Sprain of the Back, with Special Reference to the Early Treatment of these Injuries. (*Medical and Surgical Reporter*, June 23, 1894.) By Henry R. Wharton, M.D., of Philadelphia.

In reviewing the nine cases reported, which occurred in the service of the author at the Presbyterian Hospital in 1892, the writer concludes that rest in bed is of the first importance. In addition to the foregoing, strapping the back firmly with strips of adhesive plaster two and a half inches wide is very effective in relieving the pain and general discomfort. This was done in every case. Of the methods usually recommended, warmth, friction, stimulating liniments, anodynes, acupuncture, galvanism, and massage, the latter is most useful.

The most common seat of injury is the lumbo-dorsal region. Three of the cases reported passed bloody urine for a few days, indicating severe contusion of the kidney.

In all the cases of contusion of the back, if the physician institutes careful treatment at first, he may prevent the "traumatic neuroses" which give rise to so many troublesome litigation suits.

GENITO-URINARY SURGERY.

IN CHARGE OF WILLIAM K. OTIS, M.D.,
New York.

Limits and Value of Urethroscopy. (Limites et de la valeur de l'uréthroscopie. *Annales des Maladies d'Organes Génito-Urinaires*, September, 1894.) By Dr. Leopld Caspar, of Berlin.

This author arrives at the following conclusions as regards the practical value of urethroscopy.

1. That the best and most useful urethroscopes are those constructed on the principle of external illumination, and considers them far superior to those in which the source of light is introduced into the urethra.

2. That in many cases urethroscopy is most important both for diagnosis and treatment, and cannot be replaced by any other method of exploration.

3. On account of certain anatomical and physiological conditions, and

the mechanical obstacles which they cause, urethroscopy is restrained within certain limits, beyond which the interpretation of the urethroscopic image becomes impossible.

4. That urethroscopy of the posterior urethra, either for diagnostic or therapeutical reasons, is not justifiable except in a very small number of exceptional cases.

Stone in the Bladder: Choice of Operation. (*Philadelphia Medical News*, June 16, 1894.) By William H. Hingston, M.D., of Montreal.

In regard to the choice of operation for stone in the bladder, this celebrated surgeon says, "Lithotrize in all cases of adults in whom the stone is neither too large nor too hard for the lithotrite; when the urethra is or can be made sufficiently capacious for the crushing instrument; in children, however young, when the urethra permits the introduction of a crushing instrument. In very young children the cutting operation is preferable. The precise age at which lithotrity is possible must vary with the calibre of the canal, which in young children varies greatly in its capaciousness and its capacity. When the urethra in the child is not and cannot be made fit to receive the lithotrite, the cutting operation to be chosen is the lateral method. In cases of stone in the aged, when enlarged prostate not only prevents the stone being seized, but its dimensions being ascertained, one should act as if the calculus were of large size and incapable of reduction, and proceed to operate by the suprapubic method."

Surgical interference in cases of calculus in the female remains the same. The method employed years ago by Erichsen, Thompson, and others, has since been followed, and stones of large size are removed generally *per vias naturales*, after dilatation.

In exceptionally large calculi the lithotrite commonly suffices; and rarely, indeed, is the surgeon obliged to resort to the knife in the case of females.

Persistent Urethral Discharges Dependent on Subacute or Chronic Seminal Vesiculitis. (*Journal of Cutaneous and Genito-Urinary Diseases*, June and July, 1894.) By Eugene Fuller, M.D.

After a careful consideration of the causes and effects of inflammation of the seminal vesicles, together with the citation of thirty-two cases which have come under his observation, Dr. Fuller concludes that seminal vesiculitis is the cause of chronic urethral discharges in a certain percentage of cases, and that in about one-third of these cases the seminal vesiculitis is tubercular in character. It is most important to differentiate between the simple inflammatory and the tubercular cases, owing to the difference in prognosis and treatment. In the simple inflammatory cases the prognosis is good unless the subject is of an advanced age, the duration of the treatment depending largely on the chronicity of the case. The treatment employed in these cases consists of stripping the vesicles, thereby squeezing

out into the urethra their inflammatory contents by means of the forefinger introduced into the rectum. This treatment should be employed once in five to seven days, a long interval being allowed to elapse between treatments should signs of acute inflammation appear as a result of the manipulations. The duration of the treatment may be all the way from a month or six weeks in subacute cases to many months, and possibly a year in very chronic ones. At the commencement of treatment the parts are usually very tender, indurated, and distended. If the case progresses favorably, all these elements gradually diminish, and finally disappear as resolution takes place. The discharge customarily wholly disappears before a cure in the vesicles is attained. In tubercular cases the tenderness in connection with the vesicles is not liable to be so great as, and the induration more than, in simple inflammations. In this form of inflammation the parts resent the manipulation, unless, indeed, they be most gentle, and even then it is a question if this form of treatment is beneficial. If the tubercular condition is not diagnosed at first, the manner in which the vesicles, when so involved, resent the ordinary manipulations by becoming more tender and indurated, thus aggravating the urethral symptoms, speedily renders the correct diagnosis apparent. Many of these tuberculous cases become quiescent under internal medication and hygienic measures.

OBSTETRICS AND GYNÆCOLOGY.

IN CHARGE OF RICHARD C. NORRIS, M.D.,

Lecturer on Clinical and Operative Obstetrics in the University of Pennsylvania; Physician-in-charge, Preston Retreat; Consulting Obstetrician and Attending Gynæcologist, Southeastern Dispensary and Hospital for Women and Children.

Catheterization of the Fallopian Tubes. (*American Journal of Obstetrics and Diseases of Women and Children*, October, 1894.) By William P. Carr, M.D., of Washington, D. C.

In a paper read before the Washington Obstetrical and Gynæcological Society, Dr. Carr discusses the subject of catheterization of the Fallopian tubes. He has seen three cases, in which, during the passage of a sound into the uterus, it has passed into one of the Fallopian tubes. He demonstrated this to his own satisfaction by feeling the point of the sound by rectal examination. This clearly shows the possibility of the procedure in at least some cases. That the number must be few is evident from a consideration of the size of the internal ostium of the tube in the normal female. Anatomists state that the uterine orifice of the tube will barely admit a bristle. This is borne out by the author's own observations upon the cadaver.

He arranges his consideration of the subject as follows: 1. What cases are suitable? 2. What are the dangers of the procedure? 3. What bene-

fits are to be derived from its use? The only suitable cases would be those of acute salpingitis with fluid or pus in the uterine end of a tube of abnormally large calibre, held there by recent adhesions, or by a soft plug of inspissated mucus or pus. The dangers are: 1. The introduction of germs which might prove more virulent than those already in the tube. 2. Perforation of the tube or uterine wall. Under no circumstances should an instrument be used which has a diameter less than one-eighth inch at the end. 3. Pus may be forced through the outer end of the tube into the peritoneal cavity. 4. Hemorrhage may be caused in the manipulation of the uterus by tearing loose adhesions. The method of procedure advised is as follows: 1. Cleanse vagina with a bichloride douche. 2. Have hands and instruments thoroughly aseptic. 3. Introduce a Sims's or a bivalve speculum. 4. Sponge vagina and cervix thoroughly with an antiseptic solution. 5. Introduce sterile catheter or sound, not less than one-eighth inch in diameter at the end, and so curved that after entering the uterus it may be turned to one side and made to enter the orifice of the tube. Absolutely no force must be used. If the catheter does not enter without force, the case is not suitable. No anæsthetic is needed. If much pain is caused, it is probably because too much force is being used. Make no traction upon the uterus, but the cervix may be fixed by a tenaculum. It is very patent that none but those familiar with the pathological anatomy of tubal disease should undertake the operation. If the operation is successful, pus will probably flow through the catheter or follow its removal. It is possible to wash out the tube through the catheter.

Repeated catheterizations are necessary to do any good in the majority of cases. The discharge may continue for months or years. The adhesions are left and the pain continues. It is likely that there will be co-existing abscess of the ovaries. Therefore the best result to be looked for is a possible delay in operation, in some cases, until fever and acute symptoms have subsided, though there is a possibility of a cure.

With the above limitations and restrictions a brilliant future for the operation can hardly be predicted. Once or twice in the practice of a lifetime, it may enable the physician to delay an abdominal section until the conditions for operation are more favorable. It may be found, if the subject be further investigated, that the operation can be more successfully done than is anticipated.

Cæsarean Section Post Mortem with Delivery of a Living Child. (*Centralblatt für Gynäkologie*, June 16, 1894.) By Joseph Bäcker, M.D., of Budapesth.

It is well to be occasionally reminded that, in case of the death of a pregnant woman after the child becomes viable, the life of the child may sometimes be saved by decisive action. In the case cited by the author, the mother was in her last month of pregnancy when death occurred from chronic heart- and lung-disease. The child was removed immediately

after the death of the mother; it weighed two thousand five hundred and sixteen grammes and was forty-four centimetres long. When delivered it was in a state of livid asphyxia, but the heart was still acting. Schultze's method of artificial respiration was performed, the child being swung fifty-six times before it began to breathe. It was fed upon goat's milk, and at the time of the report of the case it was one hundred and eight days old, and weighed five thousand six hundred and ten grammes.

A former case, which occurred in the same clinic, is also related in this connection. This child was removed as soon as the death of the mother occurred, and was also in the condition of asphyxia livida. Schultze's method was used, the child being swung seven hundred and thirty-three times, when the heart ceased to beat. The mother died of purulent meningitis.

Resection of the Ureter and Implantation into the Bladder in a Case of Abdominal Hysterectomy. (*Southern Medical Record*, September, 1894.) By Charles B. Penrose, M.D., of Philadelphia.

In this case, which was one of scirrhous cancer of the cervix uteri, the left ureter passed through a mass of the growth in the left broad ligament. In order to remove all diseased tissue, it was necessary to excise about one inch of the ureter. After this was done, the distal end of the divided ureter was ligated with silk. The proximal end was implanted into the bladder, somewhat after the method used by Van Hook in uniting a ureter after complete transverse division, by lateral implantation of the proximal into the distal portion. (*Journal American Medical Association*, March 4, 1894.) An antero-posterior incision, about one-half inch long, was made into the bladder. A needle, armed with fine silk, was passed through the bladder wall from without in, and brought out through the incision. It was then passed through the right wall of the ureter, carried back through the incision, and passed through the bladder wall from within out. The same thing was done on the left side. Traction on these sutures brought the ureter into the bladder and when tied it was held there. The loose peritoneum about the ureter was sewed to that of the bladder by a continuous silk suture. The abdomen was closed without drain. A soft rubber catheter was retained in the bladder for three days. Recovery was uneventful, and the woman left the hospital in twenty days. Five months after operation she was perfectly well and doing her own housework.

Dr. Penrose thinks that the successful results, in the experimental and clinical researches of Van Hook, and in the case recently reported by Dr. H. A. Kelly, of Baltimore, with this case of his own, warrant us, where the patient can stand a very slightly prolonged operation and the anatomical conditions are suitable, in implanting the proximal end of a divided ureter into its distal portion or into the bladder, instead of bringing the renal end through an opening in the loin and forming a urinary fistula, as advised in our text-books of surgery.

OPHTHALMOLOGY.

IN CHARGE OF CHARLES A. OLIVER, A.M., M.D.,
Philadelphia, Pennsylvania,
AND
EDMUND LANDOLT, M.D.,
Paris, France.

Notes on the Connection between Diseases of the Eye and Diseases of the other Organs. (*Lehigh Valley Medical Magazine*, April, 1894.) By D. B. D. Beaver, of Reading, Pennsylvania.

In a short paper upon this subject, Beaver cites some very interesting examples where hygiene and therapy, directed towards some dyscrasia, has relieved ocular symptoms which were apparently local in origin. One very curious case is that of recurrent complaint of ear-irritation from spectacle hooks, associated with an indescribable ocular discomfort occurring in a subject with impaired digestion, which was promptly relieved by fasting and the internal administration of calomel and soda. In this series he also mentions a striking example of the effect of disorders of the digestive and the excretory organs upon the course of an incipient cataract, in which he shows that vision was repeatedly increased to double its former acuity, after long intervals, by careful medication directed towards the digestive and excretory organs.

Foreign Body in Orbit for Ten Months. (Personal communication to Dr. Oliver.) By W. J. Rodermund, of Appleton, Wisconsin.

The accompanying sketch represents the actual size and appearance of a piece of twig that had been extracted from the upper inner portion of the orbital cavity through a large abscess which pointed through the upper lid.



Piece of twig removed from orbit. (Natural size.)

The patient, a fifteen-year-old girl, had fallen from a tree; had sustained an area of traumatism in the part above noted, and had been unsuccessfully treated by other practitioners until she came under the care of Dr. Rodermund. The history of the case, with the appearance of a deep abscess-cavity, gave sufficient reason for an exploratory operation, which resulted in the finding of the foreign substance.

Complete recovery, with perfect vision and undisturbed lachrymation, ensued in twelve days' time.

Calcareous Degeneration of the Uveal Tract in Phthisical Eyes. (*Courier of Medicine*, April, 1894.) By T. E. Murrell, of St. Louis.

Murrell gives a very interesting history of the pathological changes

found in an eye that was removed upon account of pain and sympathetic irritation of the fellow-eye, appearing thirty-four years after an iridocyclitis occurring during an attack of scarlatina. The statement that "such eyes are dangerous, and nearly always have to be removed if the person lives long enough; for, though slow in giving trouble, after many years they are almost certain to do so," is a most important and valuable one.

Favus of the Upper Lid. (Favus de la Paupière supérieure. *Lyon Médical*, December, 1893.) By M. H. Dor.

This writer has seen a most interesting case of this disease in the person of a little girl whose sister was suffering from the same form of disorder. The clinical appearances were typical, and the microscope revealed the presence of the achorion Schönleinii.

DISEASES OF THE LARYNX, NOSE, AND SURROUNDING STRUCTURES.

IN CHARGE OF J. PAYSON CLARK, M.D.,

Physician for Diseases of the Throat, Massachusetts General Hospital; Physician to the Throat Department, Boston Dispensary.

Cauterization of the Nares. (*Journal American Medical Association*, May 26, 1894.) By E. F. Ingals, M.D.

Serious results in this procedure are due, according to the writer, to carelessness or inexperience on the part of the operator, which induces him to make extensive wounds or to repeat burning too frequently. He summarizes his conclusions as follows: 1. It is important that antiseptic applications be regularly employed after cauterization of the nasal mucous membrane, and that the nostril be closed with cotton for several days whenever the patient is out of doors. 2. As a rule, at least two weeks should intervene between operations on opposite sides, and three or four weeks between those on the same side. 3. No serious results are likely to follow cauterizations made in this way. Practically all cases of hypertrophic rhinitis may be cured by this treatment, although occasionally portions of the turbinated bodies must be removed.—*Universal Medical Journal*, September, 1894.

Operation for Adenoid Vegetations. (*Wiener klinische Wochenschrift*, June 7, 1894.) By O. Chiari, M.D.

The writer bases his remarks on two hundred and thirty-three cases from private practice, being 4.5 per cent. of all private throat cases seen by him in seven and a half years, and one hundred and fifty-two hospital cases, being 3.8 per cent. of all hospital throat cases seen in four and a half years.

The difference in percentage is probably due to the fact that well-to-do people are more observant of their children than the poorer classes. Most cases were under twenty years of age. Sixteen patients were over thirty, but fourteen of them had rather small growths. In one patient, aged forty-six, the adenoids covered the posterior nares. The patient had asthma, which disappeared after the removal of the adenoids.

The etiology is obscure. There are often slight signs of scrofulosis, but often strong, healthy children have adenoids. In some cases there seems to be an hereditary disposition. Posterior rhinoscopy was successfully employed in two hundred and six of the private patients. The method of treatment was almost always removal by cold wire snare introduced through the nose, and controlled by means of posterior rhinoscopy. The growth was removed by snare introduced through the nose in at least sixty-two of the hospital cases. Other instruments used in the hospital were the Gottstein knife, Löwenberg and Michael forceps, Trautmann's curette, and the wire snare introduced through the mouth. Before operation through the nose the nares are cocainized. Bleeding is slight, pain is absent or insignificant. With fairly reasonable children no assistants were necessary. Of one hundred and sixty-three private cases operated on solely by snare introduced through the nose sixty-six were cured in one sitting, fifty-six in two, thirty-three in three, seven in four or five, and one in nine. In twenty-four cases the method had no or only partial results. The cause of these failures was narrow nostrils. Two children of three years old, two of four, eleven of five, five of six, and twelve of seven years old, were easily operated on by this method. This procedure is absolutely free from danger, causes slight bleeding, is followed by no reaction, is free from pain, and can be applied under cocaine anæsthesia.

Pachydermia Laryngis. (*Archiv f. Laryngol. und Rhinol.*, vol. ii. part i., 1894.) By B. Fränkel and O. Chiari.

The former writer gives the history, pathological anatomy, and pathology of this condition; the latter, its clinical significance, divisions, and treatment. Attention was first called to it by Virchow in 1887. This writer recognized two forms,—pachydermia verrucosa, the condition which laryngologists call papilloma, and pachydermia diffusa. The latter form is the one considered here. The affection begins in the connective tissue of the mucosa, and affects the epithelium secondarily. This latter becomes thickened and its superficial layers horny. Papillæ grow up into the thickened epithelium, and the epithelium in places extends into the connective tissue in finger-like plugs, but the boundary between connective tissue and epithelium remains clear. Occasionally the superficial layers of epithelium scale off. The shell-formed growth of Virchow is a typical manifestation of this affection. In this form the growth in one cord fits into a depression in the other, and *vice versa*. The complications may be the so-called prolapse of the ventricle, ulcerations, and perichondritis.

Chiari divides pachydermia laryngis diffusa into two forms: the primary, typical, or idiopathic, and the secondary, symptomatic, or accessory. The first form appears generally on the processus vocalis, and more rarely on the interarytenoid fold. Some of the causes of this affection are chronic irritation, catarrh, and the abuse of tobacco and alcoholic beverages. The secondary form develops as a result of specific irritation, tuberculosis, syphilis, lupus, carcinoma, etc. The typical form on the processus vocalis is also observed in tuberculous and syphilitic individuals. The lightest form of pachydermia laryngis is a cloudiness or whitish thickening of the vocal cords or interarytenoid folds. The treatment of this form comes under that of chronic catarrh, and is not discussed here. Singer's nodes constitute another form which is often cured by simple rest and avoidance of injurious influences. Weak solutions of nitrate of silver, nitrate of silver in substance, or, when the nodes are large enough, operative interference with forceps or cutting forceps, or a fine galvano-cautery point are used for this form. The treatment of these nodes, especially in singers, demands great care. In cases of typical pachydermia diffusa on the processus vocalis it seems best to treat the catarrhal trouble, give some iodide of potassium, and only treat the protuberances locally when they cause great inconvenience, in which cases caustics, the galvano-cautery, or electrolysis may be tried, although an operation with cutting instruments has the advantage of speed and generally no reaction. Pachydermia idiopathica of the interarytenoid fold has been only rarely seen in the living. When present in any marked degree it causes hoarseness and some difficulty in respiration. Its extirpation is then indicated.

In pachydermia diffusa accessoria the growth is to be removed when it seriously interferes with respiration, deglutition, or the voice, provided there are not stronger contraindications to operation, such as a very poor general condition in a tuberculous patient, or threatening suffocation, in which cases tracheotomy is indicated.

These swellings, when caused by syphilis, generally appear late in the disease, are very resistant to internal treatment, and, when they cause irritation, should be removed.

The Pharyngo-Laryngeal Type of Miliary Tuberculosis. (*Wiener klinische Wochenschrift*, June 14, 1894.) By Georg Catti, M.D.

To the four already recognized types of acute miliary tuberculosis—namely, the typhoid, broncho-pulmonary, meningeal, and intermittent—the writer adds a fifth, of which he reports two cases. Both cases were in children having poor constitutions from birth.

The disease begins with more or less difficulty in swallowing. The uvula, soft palate, epiglottis, and aryepiglottic folds are seen to be swollen and œdematous, more or less red, showing in some cases small ecchymoses. There is also a profuse eruption of in part gray, transparent, miliary tubercles rising somewhat above the level of the mucous membrane, and in part

yellow miliary tubercles just under the surface of the mucous membrane. Except for a hyperplasia of the lymph-glands of the neck and thorax and a markedly increased heart-beat there are no other symptoms. The disease occurs in children, is very rare, and may be easily mistaken for a diphtheritic affection of the larynx on account of the symptoms of stenosis.

DERMATOLOGY.

IN CHARGE OF W. A. HARDAWAY, A.M., M.D.,
Professor of Skin-Diseases in the Missouri Medical College, St. Louis.

ASSISTED BY

C. F. HERSMAN, A.M., M.D.,
St. Louis.

Electric Effluvation in the Treatment of Chronic Ulcers of the Leg.—Marquant (*Medical Week*, August 24, 1894) reports good results from the use of franklinization in chronic ulcers of the leg. The method employed is as follows: The sore is first washed with an antiseptic solution, and then covered with absorbent cotton. The patient is placed upon the insulated seat and connected with the negative pole of an electrostatic machine. The electrode is then brought near enough to the sore to produce the electric souffle, while at the same time it is kept far enough away to prevent the passage of a spark. The effluvation is continued for ten minutes, and the sittings are given three times a week. After the treatment the ulcer is dressed with a layer of absorbent cotton. All cases where the ulcers depended on the varicose condition of the veins, uncomplicated by other troubles, improved rapidly. In those cases where other debilitating factors were present the cure was less rapid. In many of these latter cases, however, other means had been first tried and had failed.

Circumscribed Atrophy of the Hair and Skin of the Scalp.—Robinson (*Lancet*, September 8, 1894) describes several cases of an affection of the scalp which he has seen, in which one or more atrophic spots occurred upon the head. These areas, containing no hair whatever, resembled the scars left by lupus erythematosus. The patients have all been women. The author is inclined to ascribe as an etiological factor in this malady the method which women employ of dressing the hair. An inflammation, which results in the atrophy, is caused by the manner in which they put the hair up tightly on pins.

Local Anæsthesia by the Method of Schleich.—Scharff (*Medical Week*, August 31, 1894) uses Schleich's method to produce local anæthesia for small operations, such as curetting a chancroid. A small part of the sore is first rendered anæsthetic by the application of a crystal of cocaine

or pure carbolic acid. The first injection of the solution is made into this area, and afterwards the whole ulcer is injected with it. The formula for Schleich's solution is—

℞ Hydrochlorate of cocaine, ʒv;
Chloride of sodium, ʒx;
Hydrochlorate of morphine, grs. lxxv;
Distilled water, ℥vi.—M.

The author also recommends that in very painful cases of zoster one-half drachm of the solution be injected into the affected intercostal space near the exit of the nerve from the vertebræ.

CLIMATOLOGY.

IN CHARGE OF GUY HINSDALE, M.D.,
Lecturer on Climatology in the University of Pennsylvania, Philadelphia.

Meteorology in Relation to Hygiene. (*Journal of the Sanitary Institute,* London, July, 1894.)

A course of six lectures on this subject was provided in the spring of 1894 by the co-operation of the Royal Meteorological Society and the Sanitary Institute. The first lecture, by Mr. Symons, treats of meteorological instruments; the second, on the temperature of the soil, water, and air, is by Mr. Hugh Robert Mill. This author says: "Warmth seems to bear a less close relation to health than any other component of climate, or it may be safer to say that temperature acts differently according to the condition of the atmosphere with regard to moisture and wind. Intense heat may be borne in Australia without injury to the health of the individual or the permanence of the race; a much lower temperature in tropical Africa would be accompanied by great risk to life. Similarly, very low temperatures, such as those of winter in the Arctic regions, produce no bad effect on healthy men with abundant food, suitable clothing, and exercise, the Arctic climate being esteemed one of the healthiest in the world. Travellers have journeyed for months in Northern Canada, sleeping out on the snow with very light covering while the air-temperature was thirty or forty degrees below zero; while, on the other hand, people have been killed by the cold in this country [England] at temperatures not much below the freezing-point. The cold of Verkhoyansk, where the temperature sometimes falls to seventy degrees or more below zero, is probably much more severe than that of the North Pole, yet it is a permanently inhabited village. Cold alone, we may safely say, will never interfere with Arctic exploration."

In the third lecture are noted the experiences of Mr. Inwards, the president of the Royal Meteorological Society, who resided for a time in the Andes, at an elevation of thirteen thousand feet. "In these high plains of the Andes

we get a good opportunity of studying the effect of rarefied air on animal life; and one of the first things we should expect in people who have to live in an atmosphere which only allows them to take in about two-thirds of the usual quantity of oxygen each time they breathe, would be that they would be sure to suffer from lung-troubles, and that strangers coming from lower levels, where they had been accustomed to a full supply of that prime necessity of life, would fall ill or pine and die. Our surmises, though apparently founded on reason, would be wofully wrong, for we should find ourselves among a people to whom lung-diseases are almost unknown, who have no words in their language for consumption or catarrh, and who go about their daily occupations without even suspecting that they are badly used in being deprived of so large a portion of their atmosphere. As to the stranger who arrives among them, after the first inconvenience caused by the sudden change he generally improves in health, and if he had any chest-disease when he came, he generally promptly loses it. We find the men (I speak of the Aymara Indians, among whom I lived) to be a large-chested and rather short-legged race, with a great capacity for prolonged and patient exertion, but with no great aptitude for great or sudden efforts."

The fifth lecture, by Dr. C. Theodore Williams, on "Climate in Relation to Health," is a *résumé* of his recently-published book on aero-therapeutics, reviewed in this magazine in the June number of the current year. In his opinion high-altitude climates have a more beneficial effect on most forms of phthisis than any other set of climatic agents. "At the same time, this is a two-edged weapon, and in many cases of disease, such as those of the heart, liver, brain, and in emphysema and in bronchitis, as well as in the case of the aged and of those with weakly constitutions, it must be avoided as most harmful. Finally, the mountains are highly to be recommended as play-grounds for the mentally tired workers and for the young, who can rest their brains and work their muscles, and, by inhaling pure, aseptic air, may renew health and vigor, and return to their duties refreshed as well as recreated."

The Consumptive in Southern California. (*New York Medical Journal*, October 6, 1894.) By Wm. H. Dukeman, M.D.

The author points out the unfavorable side of the invalid's experiences; he shows the progress of tubercular infection in the cities, and cites his own experience in twelve hundred examinations for life-insurance, in which he found ninety-seven with diseased lungs. He says distinctly that the consumptive seeking the benefits to be derived from the climate of Southern California should not come with the intention of making his home in Los Angeles. The author is himself a resident of that city. He says: "In this climate, in the shade, there is an unpleasant, ungrateful, chilly coolness, even during the warm summer days, which is as perceptible under the shade of a palm-tree as on the shaded side of a house or hill-side. . . . Even the robust, healthy individual in summer evenings always goes provided against

this coolness with an overcoat. An overcoat is a very essential garment in this climate the year round. This coolness of atmosphere, which exists at all times in the shade and is very pronounced at nightfall, is one of the drawbacks of this climate as a health-resort. . . . It in some way depresses the system; the invalid loses all activity and energy; . . . he is pale and blue and cold and chilled clear to the marrow, and feels so uncomfortable and cold as though the flesh were retreating from the bones,—so peculiar is the effect of this coolness at times and at nightfall. On summer evenings it is very common to see our people in street-cars bundled up in overcoats and wraps to protect themselves against the uncomfortable chilliness. This peculiar coolness of atmosphere, so perceptible in many localities, alone denounces such locality as a resort for the consumptive."

PATHOLOGY.

IN CHARGE OF ALLEN J. SMITH, A.M., M.D.,
Professor of Pathology in the Medical Department of the University of Texas, Galveston, Texas.
AND
HENRY W. CATTELL, A.M., M.D.,
Demonstrator of Morbid Anatomy in the University of Pennsylvania; Prosector to the American Anthropometric Society; and Pathologist to the Presbyterian Hospital, the Institution for Feeble-Minded Children at Elwyn, etc.

The Bacterio-Pathology of the Teeth. (*Centralblatt für Bakteriologie und Parasitenkunde*, 1894, vol. xvi.)

During the past three years Professor Miller, of Berlin, has made bacteriological examination of the diseased pulps of more than two hundred and fifty teeth. He has been interested chiefly in determining: 1. What bacteriological condition constitutes a factor in inflammation, in suppuration, and in gangrene?—namely, in putrid pulps and in abscesses of the teeth. 2. Which micro-organisms can be obtained in pure culture? 3. What action the incorporation of such pure cultures has on the body of animals? 4. What action the direct incorporation of diseased pulps, or a portion of them, has on the body of animals? 5. How the intense putrefactive changes in the pulps of the teeth are to be explained, and what significance they have.

He concludes from his investigations: 1. That in the process of infection in the pulp, cocci and bacilli are represented with quite an equal degree of constancy. Less often vibriones and spirochætæ, spore-bearing bacilli, and threads. 2. The microscopical examination of cover-slip preparations authorizes the supposition that micrococci are usually concerned in the process of suppuration. 3. The bacteria usually obtain entrance to the pulp through carious dentine, and occasionally through blood-vessels. 4. The pulp becomes predisposed to infection by the action of acids and ptomaines on the dentine. 5. Bacteria not obtainable by cultivation, as the spirillæ and spirochætæ, are also concerned in the diseases of the pulp. 6. A series

of various kinds of bacilli that can be obtained by cultivation are found in diseases of the pulp, but they do not exercise much pathogenic power. 7. The typical pyogenic micrococci, the staphylococcus pyogenes aureus and albus, and the streptococcus pyogenes, are seldom found in pus from the pulp; but a series belonging to a group closely related to the pyogenic micrococci are found, and they show in mice the same suppurating action. 8. The pneumococcus was not found in a large number of researches in animals. 9. The presence of putrefactive processes greatly increases the action of the micrococci in the pulp. 10. The putrefactive processes are due to the action of various kinds of bacteria. The gaseous products (NH_3, H_2S) are accompanied by a series of other substances whose further examination is desirable.

A Brief Contribution to the Identification of Streptococcus Pyogenes with Streptococcus Erysipelatosus. (*Boston Medical and Surgical Journal*, October 4, 1894.) By Walter Reed, M.D., U.S.A.

Dr. Reed reports an autopsy upon a patient suffering from carcinoma of the liver, who died from an intercurrent attack of pneumonia. Bacteriologic examination of the organs revealed the fact that, in addition to the local infection of the lung with the *diplococcus lanceolatus*, there was general infection of the organs with *streptococcus pyogenes*. Dr. D. S. Lamb, of the Army Medical Museum, while performing the autopsy, sustained an abrasion of the finger. In twenty-four hours signs of local infection of the wound were present, and in four days he developed a typical facial erysipelas, which ran its usual course and ended in recovery. As the patient who died of pneumonia had never had any signs of erysipelas, and as the infection of Dr. Lamb's wound was clearly attributable to this case, the evidence points very strongly to the identity of the two micro-organisms in question.

Biology of the Gonococcus, and the Pathological Anatomy of the Processes produced by it. (*Archiv für Dermatologie und Syphilis*, 1894, vol. xxviii., Nos. 1, 2, and 3.) By Ernst Finger, A. Ghon, and F. Schlagenhaufer.

In a most elaborate monograph upon this subject, these authors conclude: 1. The cultivation of the gonococcus is a simple and a practical matter. 2. While Pfeiffer's serum-agar is in some cases better, urine-agar gives a more luxuriant growth. 3. Stroke culture upon urine-agar in a Petri dish is the simplest and most practical method of securing pure cultures of the gonococcus from suspected material. 4. The albumen, globulin, urea, etc., containing nitrogen, supply the nutriment to the gonococcus. While (5) salts, especially those of potassium and sodium sulphate, play an important *rôle* in the nourishment of the gonococcus. 6. Peptone is indispensable for all culture media. 7. The gonococcus does not grow upon strongly alkaline media, while a large amount of acid favors its

growth. 8. The gonococcus grows between the temperatures of 25° C. and 39° C., but best at 36° C. 9. Gonorrhœal pus contains the gonococcus at the ordinary temperature of the room, virulent and living, as long as the pus is not thoroughly dried. 10. The gonococci placed in water are destroyed in a few hours. 11. Pure cultures of the gonococcus are killed if brought in contact for a few minutes with the usual antiseptics. 12. The gonococcus is undoubtedly the cause of gonorrhœal processes and inflammation. 13. Gonorrhœal processes do not even produce temporary immunity. 14. Injection of the pure culture of the gonococcus into the knee-joint in animals produces a quick, acute inflammation of the joint. No increase in the number of gonococci could be demonstrated in the joint. 15. The products of the gonococcus produced by filtering bouillon cultures, or secured by the boiling of the cells themselves, when injected into the joint, produced no symptoms in the animals. 16. Gonococci in pure culture, brought into the abdominal cavity of animals, produced a quick, localized peritonitis without noticeable increase in the number of gonococci. 17. Fever increases the susceptibility of man to gonorrhœal infection. 18. The behavior of the gonococcus varies according to the variety of the epithelium lining the mucous membrane. 19. On mucous membrane covered with flat epithelium the gonococcus remains superficial. 20. Cylindrical epithelial cells offer no hinderance to the entrance of the gonococcus, which very soon penetrates into the connective tissue. 21. When the gonococcus has gained entrance into the tissue, pus-formation is quick and active. 22. Having once gained access to the blood-current, the gonococcus may give rise to the most diverse articular, peri-articular, and peri-chondritic metastasis, the gonococcus having a predilection for the protoplasm of the pus-cell. 23. Having gained access to the connective tissue, the gonococcus may here set up a pus process.

The Cause of Death in Extensive Burns of the Skin. (*Archives de Médecine expérimentale et d'Anatomie pathologique*, September, 1894.) By Kianicine, M.D.

Kianicine has made some experiments to determine the presence of a ptomaine in the blood of animals affected with burns of large extent. In thirty-five experiments the ptomaines were found both in the blood and in the organs, while the blood of healthy animals, prepared in identically the same manner, did not contain this ptomaine The method of Stas-Otto was employed in the same manner as is done by Brieger for preparing the peptotoxine. Extraction is accomplished at a temperature of 80° C., with alcohol, evaporation, and the digestion of the remainder with amyl alcohol. Next, evaporation to dryness, dissolving the product in water, and purification by means of the subacetate of lead, by the use of sulphuretted hydrogen; and finally a purification by means of ether. This poison develops only in animals burned or scalded, and is not a product of chemical manipulation. Some special reactions are given for it in the paper.

The Positive Chemotactic Action of Croton Oil when injected beneath the Skin. (*Archiv für experimentelle Pathologie und Pharmakologie*, 1894, vol. ii., Nos. 1 and 2.) By Z. Dmochonski, M.D., and W. Janowski, M.D.

These authors have found that if croton oil be used hypodermically in dogs an inflammation of the subcutaneous connective tissue takes place, varying in accordance with the strength of the solution employed; if a strong croton oil solution—1 part to 5 of olive oil, and 1 to 10—be used, skin necrosis with sero-hemorrhagic inflammation is produced, with an enormous infiltration of the subcutaneous connective tissue, covering a large area. In rabbits croton oil solutions of a strength of 1 to 30 and 1 to 60 have a positive chemotactic action, though this comes on later, after fourteen days.

The Presence of Tubercle Bacilli in the Nasal Cavities of Healthy Individuals. (*Archives de Médecine expérimentale et d'Anatomie pathologique*, July 1, 1894.) By M. I. Strauss, M.D.

Strauss found in twenty-nine perfectly healthy individuals who were thrown in contact with phthisical patients that nine harbored the bacillus of tuberculosis in the cavities of the nasal fossa. Of this number, six lived constantly at a hospital for consumptives, performing ordinary household work. The other three were found in persons treated in the same hospital, but for chronic troubles which were non-tubercular. The experiments were confirmed by peritoneal inoculations in the guinea-pig. In seven cases the intraperitoneal inoculations, with the products taken from the nasal cavities, caused the guinea-pigs to die in the first few days, either of septicæmia or of purulent peritonitis. In the remaining thirteen cases the animals showed no lesions whatever. The author next intends to undertake experiments in connection with persons who are not thrown in direct contact with tuberculous persons.

Primary Sarcoma of the Small Intestine in the New-Born. (*Berliner klinische Wochenschrift*, August 27, 1894.) By Carl Stern, M.D.

Stern reports, with illustrations, both macroscopical and microscopical, a case of primary sarcoma of the small intestine in a new-born child. The author considers that these cases are rare, as he could find no mention of this condition in the standard German works on pathology, though a paper by Balser reports several cases.

The child appeared to be normal at birth, but it was soon noticed that no meconium appeared, the child vomiting soon after birth a large amount of a bile-stained material. The after-birth was normal, and nothing was found by careful examination of the body. On the next day the child vomited spontaneously three times, as well as upon every attempt at taking milk from the mother's breast. There was no passage this day, though the urine flowed freely. The diagnosis of congenital occlusion of the bowel was made, though the nature was not determined. By the aid of a glycerin

suppository, meconium the size of a hazel-nut, mixed with much mucus, was passed. No operation was performed, and the child died on the fourth day. While nothing of a pathological character was found in the heart, lungs, pleura, spleen, kidney, or brain that had any bearing upon the following condition, one hundred and thirty-two centimetres from the commencement of the small intestines, the inside of the small intestine showed a one-and-a-half-centimetre high swelling, sloping down for four or five centimetres to the normal gut. A portion was covered with mucous membrane. On section, the tumor is seen to be composed of three layers: the first part of a regular yellowish-white color, while the middle part is streaked with opaque gray lines which radiate to the unequally whitish-red layer beneath. The section illustrated was taken from about the centre of the tumor, and is semi-diagrammatic. It showed the growth to be a sarcoma.

Experimental Research upon the Inoculability of Cylindrical Epithelioma. (*Archives de Médecine expérimentale et d'Anatomie pathologique*, July 1, 1894.) By Henry Morau, M.D.

Morau thinks that cylindrical epithelioma of the white mouse is capable of being inoculated in animals of the same species by grafting. Heredity plays a considerable part in the development of these neoplasms, in preparing a suitable soil for their evolution. It was found that these neoplasms might become general, and metastasis come on from any kind of trauma. Gestation accelerates the evolution of these neoplasms. They seem to possess a variable virulence. As the growths appear in different parts of the same animal, the neoplasm is less capable of inoculation, and less virulent. If these neoplasms are not ulcerated they do not contain any bacteria; if ulcerated, they contain the ordinary bacteria of suppuration.

The Encouragement and Support of the Laboratory-Teacher and Laboratory-Specialist. (*Medical News*, September 15, 1894.) By A. P. Ohlmacher, M.D., of Cleveland, Ohio.

The New Relations of Pathology and Practical Medicine as Bearing upon the Pathological Departments of our Hospitals. (*Medical Record*, August 25, 1894.) By John Slade Ely, M.D., of New York City.

Ohlmacher considers that the valuable assistance rendered at the present day by the laboratory worker should cause both the specialist and the general practitioner to treat him in the same manner as they would any other consultant. As this would secure bright young workers ample compensation, they would be encouraged to choose laboratory teaching and work as their object in life, and would not use it as a stepping-stone to other positions.

Ely thinks that the time has now come when a pathologist to a hospital should have suitable buildings and equipment, and should receive a compensation for the work that he is now expected to do for the love of science. A fair criterion of this amount might be found in the salaries paid by our universities to their professors of pure science. In conclusion, the author

refers to the inestimable good that has already been accomplished by the workers in the Berlin Institute for Infectious Diseases. [The managers of the Boston City Hospital are preparing to erect and equip a special building for pathological work, at a cost of about forty thousand dollars. When completed, *paid* assistants will carry on the investigations.]

A Clinical and Experimental Study of Uræmia. (*American Journal of the Medical Sciences*, August and September, 1894.) By William E. Hughes, M.D., Ph.D., and William S. Carter, M.D., of Philadelphia.

The authors believe that while uræmia is commonly the result of diseased kidneys, yet it is perfectly possible under exceptional circumstances that it may occur with healthy kidneys. Here the explanation is a sudden overproduction of the poison. These cases are not to be confounded with those in which, while the kidneys are extensively diseased, the urine is still free from albumen. The fact that uræmia may be accompanied by a rise in temperature is pointed out, the form accompanying parenchymatous nephritis being most frequently that when such a rise of temperature is seen. From experiments it seems probable that the poison-producing uræmia may be productive of the high temperature. In the purely experimental part of the paper it is proved that neither urine nor any of the ordinarily recognized constituents of urine are capable, when injected into the blood, of producing uræmia. Tying the renal arteries in dogs produced a condition exactly similar to human uræmia, and the injection of serum from such dogs into other dogs produced a similar set of phenomena. A like result was brought about by the injection of serum from men suffering from uræmia, or by the injection of serous effusions, but when the uræmia had cleared up, injection of reaccumulated serous effusions produced no results. As to the nature of the poison which exists in the blood-serum or serous effusions, no definite conclusions are reached. It is thought to be of an albuminous nature from the fact that its power is much lessened by heat and that it is not readily dialyzable. Whatever uræmic serum was injected into dogs there was found a constant and uniform condition of the kidneys. The cells of the tubules were granular or fattily degenerated, and occasionally the endothelium of the Malpighian bodies was proliferating, the condition suggesting strongly a glomerulo-nephritis. When serum from Bright's disease without uræmia was used a similar but not so marked condition was found. Serum from a healthy man caused a slighter kidney degeneration. From this it is argued that the poisons producing Bright's disease and uræmia are the same, and that uræmia is generated by an excessive amount of poison. The effect upon the kidneys of rabbits is more marked than on those of dogs. Dog's serum produces less effect on them than human, while horse's has none. The inference drawn is that the poison has much to do with the diet, and is probably generated in the digestive system. In one case the characteristic degeneration of the retina was produced, showing a further action of the poison. In treatment diuretics are

condemned as useless. Diaphoresis is advocated. In marked cases bloodletting is strongly advised, which may be supplemented by injections of saline solutions with much benefit. It is pointed out that saline solutions are absorbed almost as promptly when injected subcutaneously as intravenously.

MISCELLANEOUS.

Dangers of Bicycling. (*Gazette des Hôpitaux*, September 13, 1894.)—At the meeting of the Paris Academy of Medicine held on September 11, 1894, Mr. Hallopeau read a criticism on the article by Mr. L. H. Petit in which he reported three cases of sudden death from heart-disease while bicycling. The opinion held by Mr. Petit that the exercise is contraindicated in old men and in persons with cardiac disease seems to Mr. Hallopeau to be exaggerated. He thinks that similar accidents, or those due to the bicycle alone, are so unusual that they are of secondary importance. In lung-diseases he considers bicycling a useful respiratory gymnastics which increases notably the amplitude of the respiratory movements. His report terminated with conclusions which, after slight modifications, were adopted by the Academy, as follows: 1. The Academy recommends all persons who desire to indulge in bicycling to submit at once to a medical examination. 2. In experienced persons in good health the moderate use of this machine does not affect the cardiac functions. 3. The efforts made, either when first learning to ride or with too rapid riding or by ascending of hills, are, perhaps, to be looked upon as dangerous. 4. It is chiefly for heart- and lung-diseases that interdiction is perhaps absolute. 5. The Academy desires to receive articles from physicians throwing light upon this question.

A. W. P.

FORENSIC MEDICINE.

IN CHARGE OF LORENZO D. BULETTE,
Of the Philadelphia Bar.

THE LEGAL STATUS OF CHRISTIAN SCIENCE IN THE TREATMENT OF DISEASE.

It has hitherto been doubtful whether the treatment of disease according to the principles and practice of Christian Science comes within the scope and spirit of the statutory provisions of the different States regulating the practice of medicine and surgery; but, in a case[1] which arose under the Nebraska Medical Act, 1891,[2] the Supreme Court of that State determines the legal status of such treatment, and declares that the act is as much directed against any unauthorized person who shall operate on, profess to heal, prescribe for, or otherwise treat any physical or mental ailment of another, as against one who practises "medicine, surgery, and obstetrics," as those terms are commonly understood, and that any person not within the exceptions of the act, and not having complied with its requirements as to a certificate of qualification, who shall, under any pretence, operate on, profess to heal, prescribe for, or otherwise treat any physical or mental ailment of another, thereby renders himself liable to its penalties.

The statute above referred to is entitled an "act to establish a State board of health; to regulate the practice of medicine in the State of Nebraska," etc., and section seventeen thereof is as follows: "Any person shall be regarded as practising medicine within the meaning of this act who shall operate on, profess to heal, or prescribe for, or otherwise treat any physical or mental ailment of another." But the act excepts from its penalties gratuitous services in cases of emergency, and does not apply to commissioned surgeons in the army and navy of the United States, nor to nurses in their legitimate occupations, nor to the administering of household remedies.

Under section seventeen of this act, one M., an illiterate man, was indicted for practising medicine according to the practice and teachings of Christian Science, he being unskilled in the art and science of medicine and surgery, and without the required certificate of qualification, and he not having been a graduate of any recognized medical college, or received a

[1] State *vs.* Muswell, 58 N. W. Rep. 728 (1894).
[2] Chap. xxxv. § 17.

diploma from any such college, and not being within any of the exceptions of the act.

It was argued by counsel for the defendant that "to place upon section seventeen the construction contended for by the State, and to hold that the practices of the defendant are a violation of the law, would be to abrogate section four, article one, of the Constitution of this State, which provides that all persons have the natural and indefeasible right to worship God according to the dictates of their own conscience, and also the second provision of section four of the enabling act, which provides that perfect toleration of religious sentiments shall be secured, and no inhabitant of said State shall ever be molested, in person or property, on account of his or her mode of religious worship. The defendant and those of the same faith with him believe, as a matter of conscience, that the giving of medicine is a sin; that it is placing faith in the power of material things, which belongs to Omnipotence. To the Christian Scientist it is as much a violation of the law of God to take drugs for the alleviation of suffering or the cure of disease as for a Methodist clergyman to take the name of his God in vain to relieve his overwrought feelings. It is as much the duty of the defendant, as his conscience and understanding teach him his duty, to visit the sick and afflicted and relieve their distress of mind as it is for the Presbyterian minister to go into his pulpit on Sabbath morning, and preach the word of God according to the understanding of that denomination, or visit the bedside of one of his sick parishioners, and administer that religious consolation which is so dear to the heart of the Christian, and which is apparently so necessary to their spiritual welfare. The act of the latter, the eyes of all Christendom look upon in admiration as the performance of a Christian duty. Upon the former, the able counsel for the State would have you look upon as the act of a criminal."

In answer to this argument the Supreme Court said, "It is conceded that the perfect toleration of religious sentiment, and enjoyment of liberty in all religious matters, is of paramount importance; and, lest the contention of the defendant may be misunderstood or imperfectly stated in our own language, that contained in the brief filed on behalf of the defendant will be freely used. Such evidence as was in that brief deemed sufficient to illustrate the argument of the defendant was as follows: R. W. testified that his brother's boy came home from Florida in September, 1892; that there were running sores on his legs, caused by rheumatism, and that he could not walk, except by the aid of crutches, and after one treatment by the defendant he walked by the aid of a cane, and, after using that for a while, threw it away, and walked as other boys do. J. E. testified to having been bitten by a rattlesnake, and that he at once sought the defendant, and asked him for help. After talking with the defendant at the church-rooms, they went to his house; and what took place there is best told in the language of the witness himself: 'Q. What did you do then? A. The pain ceased after his treatment, and after driving to his house it seemed to get

worse, until about eight o'clock. He talked to me on the Bible, and different subjects in the Bible, and about eight o'clock he said he would treat me again. I laid down on a lounge, and he sat down, and put his hands over his face, and was in that position maybe ten or fifteen minutes; and all at once I felt it come right through me, and it raised me up, and I sat on the lounge, and I told him I had wakened up. And from that time on I had no more pain, only there was one or two minutes, when I first got up and put my foot on the floor, that the stiffness seemed to be hard, for a few minutes. Now, during all this time I never lost a meal, nor an hour's sleep after that one treatment.' "

L. B. testified that he was afflicted with a disease that baffled the skill of the physicians, who advised him, if he could obtain assistance from Scientists, that he should try; that he then sought aid from them, and a very short time afterwards was able to go about as usual, and sawed wood for the people of the village in order to earn a livelihood; that about three years ago, prior to the time of giving his testimony, he had fallen down a flight of stairs, and had received serious injuries; that the defendant was sent for and visited him; and that he recovered without any other aid than that of the prayers of the defendant.

The witness B. testified of his serious illness from pneumonia, and that the defendant called on him, and explained the Scripture to him, and prayed for him, and that in a short time he recovered.

Mrs. G. testified that in the previous January her little boy, four years of age, had an attack of scarlet fever; that the physicians pronounced his case hopeless; that the child was treated by the Scientists, and fully recovered.

The defendant M., having been sworn, testified that he was a Christian Scientist, so far as he understood, and that he lived up to the teachings of Jesus Christ; that he first studied the Christian Science in his home at B., and was cured of physical ills through that study. After that he studied with Mrs. E. in her Metaphysical College, in Boston, of which college he was afterwards a graduate. The term Christian, as he understood it, means "Christlike;" the teachings of Jesus understood and followed; science, truth understood. He further testified that the Scripture teaches us that God is truth. "Truth," the witness said, "is that which is always the same, can never change; the one Supreme Being, the All Powerful; that which created all things that are; He who made all that was made, and made it good, as is said in His Word. The Scripture tells us to know the truth, and it will make us free. We understand 'to be free' means to be free in the full sense,—free from sickness as well as from sin; that if God can heal the sinner, He can heal the sick, or else the sick are more hopelessly lost than the sinner." "The Christian Science Church," said the witness, further, "has a recognized code and text-books of theology. These text-books are the Bible and 'Science and Health,' these two books being the recognized standard among Christian Scientists and adherents of that faith."

The accused further testified that he had not practised surgery or medicine, or any of the branches thereof, within the State of Nebraska, within eighteen months preceding the trial; that, in a medical sense, he had not, within eighteen months, treated any physical or mental ailment within that time, for, said he, "I understand with God's laws, and not mortal man's. We can experience this only as we learn of the nothingness of mortal man, and of the omnipotence of God. When persons request aid, and come to us for advice and assistance, we treat them as a mother treats her child that is frightened at some object it fears,—by showing them that God is love; and, understanding the all presence of love, there is no room for fear. We treat it as a question of fear,—that is, we seek to dispel the fear by showing them the presence of love. The Scripture tells us that perfect love casts out fear. If we can convince ourselves, and those that are suffering, that God is all-powerful, and that God is supreme; if we can show them through the Bible that God is the power that reigns entirely,—just so far as they understand that, so far will they experience love and harmony, and respond as we speak of it. So far as I understand them, I have taught and teach the doctrines of Christian Science. Prayer enters into our work. We are taught by the Scripture to pray always. We understand prayer to mean the earnest sincere desire of the heart; and that desire is that we may know the omnipotence of God, and the nothingness of ourselves. Our authority for this treatment is the Scripture,—Jesus' teachings. Jesus taught His disciples to go out into the world, and He healed the sick, and cast out devils, and He raised the dead; and He further said (His last words before His ascension): 'Teach all nations, baptizing them in the name of the Father, Son, and Holy Ghost.' 'Teach them, if you are my disciples, to observe all things whatsoever I have commanded you; and lo! I am with you always, even unto the end of the world.' We believe and understand, so far as we obey Him, that the same power is for us to-day, as well as eighteen hundred years ago."

Continuing his evidence, this witness said, "I have been engaged in this work since I first began to read 'Science and Health' in connection with the Bible, which was eight years ago. I was healed from physical ills through the 'Science and Health' and the Scripture. I was not treated by Christian Scientists." In the course of his testimony this question was asked the witness, and the following answer was elicited: "*Q.* What is your custom in allowing people and parents to call physicians,—the custom of yourself and church? *A.* We believe that every one has a right to express their wish, and it is always understood that if they prefer some other treatment, or some other mode, or some one else to aid them, it is their privilege. We always do that. It is taught in our text-books. We never give any medicine. That is entirely contrary to the teaching of Christian Science. I treated Mr. B. about three years ago. I found him suffering a great deal. If I remember, he was not able to sit up; was bolstered up in bed, I think. I treated him solemnly, and talked with him of the teaching

of the Scriptures, and read to him from them, and also from 'Science and Health,' and sought to show him that there was a greater power than man, and that that power ruled in love, and, in proportion as that power was understood, we should demonstrate the presence of love. At the end of a week he was able to go to his stock-yards. I have no way of knowing the number of persons I have treated within eighteen months by Christian Science. I may have treated a hundred or more. Of these only two died."

Inasmuch as the defendant relied upon the teachings of the Bible as his authority, the Court thought it not amiss to refer to it for instances applicable to his case; and accordingly cited the eighth chapter of the Acts of the Apostles, containing an account of Simon, a sorcerer, who had used sorcery and bewitched the people of Samaria, giving out that he himself was some great one. "This Simon," says the Court, "was thought to be the possessor of great power. Under the ministrations of Philip, he believed and was baptized. Thereafter, sufficiently for our purpose, there follows a statement of the conduct of this convert:

"'18. And when Simon saw that through laying on of the apostles' hands the Holy Ghost was given, he offered them money,

"'19. Saying, Give me also this power, that on whomsoever I lay hands, he may receive the Holy Ghost.

"'20. But Peter said unto him, Thy money perish with thee, because thou hast thought that the gift of God may be purchased with money.

"'21. Thou hast neither part nor lot in this matter: for thy heart is not right in the sight of God.

"'22. Repent therefore of this thy wickedness, and pray God, if perhaps the thought of thine heart may be forgiven thee.

"'23. For I perceive that thou art in the gall of bitterness, and in the bond of iniquity.'"

And the Court continuing says,—

"It would seem, from this account, that Simon regarded the gift of the Holy Ghost, by the laying on of hands, as something akin to and an improvement upon, the sorcery which he himself practised, and, therefore, that its advantages were proper subjects of barter. The language of Peter, 'Thy money perish with thee, because thou hast thought that the wisdom of God may be purchased with money,' was a most emphatic and authoritative refutation of the idea that the special gift of God could form a proper basis for money transactions. The universal reprobation in which the conduct of Simon has ever been held has crystallized in the Latin word 'Simonia,' the English 'Simony;' the derivative in each instance signifying either the crime of buying or selling ecclesiastical preferment, or the corrupt presentation of any one to an ecclesiastical benefice for money or reward.

"In the case at bar the defendant testified as follows: '*Q.* You may state whether or not you make any charges when people come to you for advice, or when you go to them. *A.* As a rule, I do not. We tell them we leave

the question to them and God. I spend the whole time at work, showing the people, through examination and administration, what the teachings of the Scriptures are; and Jesus says the laborer is worthy of his meat, and we expect that those for whom we spend our time to remunerate us for it. If they are not willing to part with the sacrifice themselves, it is not expected that those should reap the benefit.' This language puts the matter of compensation in another light than that adopted by Simon in the case above cited, but that even this modified claim is open to serious objection we think still further illustrated by an instance to which reference will now be made. In the fifth chapter[1] of the book of II. Kings, there is an account of the healing of Naaman of leprosy by compliance with a very simple hydropathic course of treatment prescribed by the prophet Elisha. After he was healed Naaman said to Elisha, 'I pray thee, take a blessing of thy servant;' but Elisha said, 'As the Lord liveth, before whom I stand, I will receive none.' And he urged him to take it, but he refused.

"In chapter xxii. *et seq.* of Numbers is recorded God's disapproval of Balaam's partly-executed project of profiting by the use of the Divine power with which he was endowed.

"In the light of these instances," continues the Court, "cited from the defendant's own authority, it is confidently believed that the exercise of the art of healing for compensation, whether exacted as a fee or expected as a gratuity, cannot be classed as an act of worship. Neither is it the performance of a religious duty, as was claimed in the district court. There is no claim in this case that compensation, in one or the other of these methods, was not accepted when tendered. The evidence affirmatively shows the contrary. Not only is this true, but we find a very considerable part of defendant's brief devoted to an argument as to the inefficiency of established and recognized modes of treatment in the cure of diseases, as compared with defendant's method, as tested by the results attained. The evidence upon which the case was tried convinces us that the defendant was engaged in treating physical ailments of others for compensation. He was within none of the exceptions provided by statute. The instruction which required that, to a conviction, he should be found guilty of practising medicine, surgery, or obstetrics, as generally or usually understood, was erroneous. The object of the statute is to protect the afflicted from the pretensions of the ignorant and avaricious, and its provisions are not limited to those who attempt to follow beaten paths and established usages. The conservatism resulting from the study of standard authors might be somewhat depended on to minimize the evils attendant upon unlicensed practitioners' attempts to follow regular and approved methods, although, as against even these, the law should be enforced. Still more stringently should its provisions be rendered effective against pretensions based upon ignorance, on the one hand, and credulity on the other. The statute does not merely give

[1] Verses 20–27.

a new definition to language having already a given and fixed meaning. It rather created a new class of offences, in clear and unambiguous language, which should be interpreted and enforced according to its terms. Under the indictment the sole question presented, upon the evidence, was whether or not the defendant, within the time charged, had operated on, or professed to heal, or prescribed for, or otherwise treated, any physical or mental ailment of another. There was involved no question of sentiment, nor of religious practice or duty. If the defendant was guilty as charged, neither pretence of worship, nor of the performance of any other duty, should have exonerated him from the punishment which an infraction of the statute involved."

BOOK REVIEWS.

A System of Genito-Urinary Diseases, Syphilology and Dermatology. By various authors. Edited by Prince A. Morrow, A.M., M.D. Vol. III., Dermatology. New York: D. Appleton & Company, 1894.

This, the third and last volume of Morrow's System of Genito-Urinary Diseases, Syphilology, and Dermatology, is devoted to dermatology. The names of the writers who have contributed to this work are for the most part well known in dermatological literature. The typographical work is excellent, as one would expect from such well-known publishers. The colored lithographs deserve special mention, as some of them are above the average in illustrative value. Certain faults are present in the book, considered as a whole, which are perhaps inseparable from the composite work of many minds. Not all of the authors have pursued the same plan in treating the various subjects. It seems to the writer that, in a work which is intended especially for readers who reside in the United States, too much space has been in some instances devoted to diseases which are essentially foreign.

The first article, on Anatomy, is by Dr. Louis Heitzmann. The author very properly condemns the old methods of preparing sections of the skin for microscopical examination as not making sufficiently clear the minute anatomy. In considering the physiology, no mention is made of Unna's recent teaching as to the mechanism of the formation of the sweat. The chapter on Semeiology is by Dr. Morrow, and is clearly expressed, but we should object to the inclusion of scales among the primary elementary lesions of the skin. The articles on Etiology and Diagnosis have been written by Dr. Hardaway. Dr. Morrow in his classification has followed Crocker's modification of Hebra's system, and we are not sure that this has been an addition to the consistency of the work. It has never seemed to us that the exanthemata properly fall within the sphere of dermatology. Dr. Graham has written of these fevers in a satisfactory manner. It strikes one as odd that rötheln should be described under the title "Rubeola," as this designation is commonly applied to measles. We are pleased to note that Dr. Graham believes in the unity of the viruses of variola and vaccinia, a belief to which the recent experiments of Haccius and Eternaud give additional support. Dr. Elliot, who wrote the excellent articles on the erythemata, does not yield his assent to the opinion that erythema multiforme is due to a primary infection; he regards erythema nodosum as being essentially a form of

erythema multiforme. As an application in erysipelas Dr. Elliot thinks very highly of ichthyol.

Dr. Stelwagon has written the articles on impetigo and impetigo contagiosa. In his prefatory remarks he states that, in his experience, cases of so-called impetigo are really anomalous cases or impetigo contagiosa. After this it seems queer to find it stated that impetigo must be differentiated from impetigo contagiosa. The same author has contributed an excellent article on dermatitis herpetiformis. The editor is to be congratulated on having secured for this article an author so well fitted to interpret the concept of the original describer of the malady. Dr. Stelwagon believes that there is a near relationship between the pustular form of dermatitis herpetiformis and impetigo herpetiformis. Arsenic is assigned rather a small place in the treatment of the affection.

The articles on herpes and pemphigus are from the pen of Dr. Zeisler, and are full and carefully written expositions of the existing knowledge upon these subjects. In the space at his command, which is necessarily somewhat limited, Dr. Piffard has given a fairly complete account of eczema. Dr. Elliot writes the paper on dermatitis seborrhoica. We are glad to see this name used in designating the affection in preference to the title originally suggested by Unna,—eczema seborrhoicum. The author believes that under some circumstances the disease is contagious. Resorcin and sulphur are the remedies which Dr. Elliot most strongly recommends in the treatment of this affection.

Dr. Corlett contributes the chapter on Psoriasis. He mentions the various theories of its etiology, and inclines to that which assigns to the disease a nervous origin. The same author writes on dermatitis exfoliativa, and very properly insists on the fact that many cases of this malady are simply the last stages of some pre-existing disease of the skin. The article on Lichen Ruber is by Dr. Fox. Certainly not all dermatologists would agree with the author that the lichen ruber of Hebra is identical with the pityriasis rubra pilaris of Devergie. The author describes the affection under three clinical forms: the squamous, the papular, and the rugous. One is inclined to think from this article that the term lichen ruber is more comprehensive than has been usually taught.

The chapter on Drug Eruptions is by Dr. Morrow, and is unusually full in the number of drugs and the dermatoses caused by them which are mentioned. Dr. Allen gives to micro-organisms a large share in the etiology of purpura, which opinion is amply substantiated by much excellent authority at the present day. Dr. Hyde contributes the articles on ichthyosis, scleroderma, and elephantiasis, besides a number of less important papers. The conscientious work of this author is rendered still more valuable by the very full bibliography which accompanies each article. Dr. Heitzmann is at variance with some of the best authorities when he states that pathologically xanthoma diabeticorum differs only in degree from xanthoma.

The important section on tuberculosis of the skin is contributed by Dr. Bowen. The author describes the various lesions of the skin which are recognized as depending on the presence of the tubercle bacillus under four heads: Tuberculosis cutis, lupus, tuberculosis verrucosa, and scrofuloderma. It is confessedly very difficult to describe a disease like lupus in all its varieties. The author has accomplished this in a creditable manner, noting first the general characteristics of the various forms, and then the most common lesions as they occur in the different regions of the body. Dr. Bowen, we are glad to note, appreciates the advantages of electrolysis in certain cases of lupus. Dr. Bowen refers to the belief of many eminent dermatologists that lupus erythematosus is a tubercular process, but sides with the majority who regard it as entirely independent of the tubercle bacillus. The criticism which suggests itself upon this portion of the author's work is that he has not sufficiently insisted upon the great resemblance which some cases of tuberculosis of the skin present to lupus erythematosus. The recent work of Leloir sufficiently emphasizes this. The

writers of this review have enough evidence to cause them to believe that many cases put down as lupus erythematosus are in truth tubercular infections of the skin quite indistinguishable from lupus erythematosus, except by prolonged and careful observation with microscopical investigation.

Dr. Morrow has had exceptional advantages for the study of leprosy, and his article fully proves that he has used his opportunities to good purpose. His paper is profusely illustrated with cuts from original photographs. The author ranges himself with those who believe in the contagiousness of leprosy, and cites evidence to support his views. In the treatment of leprosy Dr. Morrow thinks chaulmoogra oil and strychnine are of most use among drugs.

Dr. Hartzell, in his article on Paget's Disease, prefers to leave the question as to the true nature of the bodies described by Darier and Wickham in doubt. Epithelioma, by Dr. Fordyce, is a good paper. Following the general consensus of opinion, the author regards rodent ulcer as one of the forms of epithelioma. The knowledge which we have of the facts that point to the parasitic nature of cancer is summed up, and the author seems favorably disposed towards this view. In the treatment there is no mention of methylene blue, though good results have been reported from its use abroad.

The articles on Verruga and Endemic Boils, by Dr. Matas, are valuable, and give evidence of careful research, though we consider that too much space has been given to these subjects. The neuroses of the skin are treated by Dr. Bronson. The author reckons among the excitants of pruritus spastic contractions of the arrectores pilorum. As internal sedatives in essential pruritus, cannabis Indica and gelsemium are recommended. To carbolic acid the chief place is given as a local sedative. The chapter on Diseases of the Sweat-Glands is by Dr. Pollitzer. One does not notice anything novel, but the articles are well written and interesting.

The subject of seborrhœa is treated by Dr. Elliot. The opinion is expressed that many of the cutaneous disturbances classed under seborrhœa sicca are of parasitic origin. In writing of acne Dr. Elliot eliminates from this category the eruption which is common with menstruating women, and which is usually regarded as an acne. The author is not in favor of opening acne pustules, as he thinks more scarring results than if allowed to terminate in some other way. We believe that few dermatologists would endorse this, and certainly the teachings of general surgery would not bear out such treatment.

We are glad to note that the credit for the application of electricity to the removal of hair is given by Dr. Jackson to Dr. Michel, of St. Louis, to whom it certainly belongs. Dr. Jackson contributes the chapter on Alopecia. He gives some directions for the hygiene of the hair, which are very good, as we should expect from one who has become a recognized authority in this domain of dermatology. Dr. Robinson writes the article on Alopecia Areata. From a great number of examinations he believes in the parasitic origin of the disease. The same author, writing of sycosis, thinks it is of importance in the treatment of this affection, not only to use parasitic agents, but also to treat the inflammatory phenomena. The article is well written and the treatment is unusually full.

The articles which treat of the vegetable parasites are mostly written by Drs. Van Harlingen and Stout. The opinion of Unna as to the several varieties of the favus fungus is noted, but no mention is made of the work of Sabouraud, which goes to show that there are also different forms of the trichophyton. The chapter on animal parasites is by Dr. Leviseur. Although the work is well done, it seems to us that this part of the volume is not so comprehensive as it should have been.

Space does not suffice to mention many other shorter articles, which are, as a rule, as carefully written as the more important ones. As an appendix there is added a table of statistics embracing more than two hundred thousand cases of skin-disease, compiled from the records of the returns to the Committee on Statistics of the Amer-

ican Dermatological Association. This is of value as giving at a glance an idea of the relative frequency of the various affections of the skin in this country.

In conclusion, we will say that in our estimation this volume forms a worthy completion of an important undertaking in medical literature. The editor and his collaborators are to be congratulated on the success of their efforts. Notwithstanding the great number of dermatological works which have recently issued from the press, this volume should find a place in the library of every dermatologist.

W. A. H.
C. F. H.

MEDICAL JURISPRUDENCE, FORENSIC MEDICINE, AND TOXICOLOGY. By R. A. Witthaus, A.M., M.D., Professor of Chemistry, Physics, and Hygiene in the University of the City of New York, etc., and Tracy C. Becker, A.B., LL.B., Counsellor-at-Law and Professor of Criminal Law and Medical Jurisprudence in the University of Buffalo. In four volumes. Volume I. Large 8vo, 845 pages, illustrated with twenty-four wood-cuts and two lithographic plates in colors. Price, in muslin, $5.00; in brown sheep and in law style, $6.00 per volume. Sold by subscription only. William Wood & Co., 1894.

A book written upon legal medicine should naturally possess those characteristics which fit it for reading and reference both by the members of the law and medical profession. It is a well-known fact that the physician is too often ignorant of the common usages of business, let alone that of the law, and has, therefore, to be told many things which are elementary to the lawyer. On the contrary, the lawyer is not a physician, and the workings of nature manifested through the body are a *terra incognita* which can only be explored by the guidance of an experienced hand. Witthaus announces in the introduction that "the division of pure medical jurisprudence is contained in the present volume, while the legal aspects of neurology, obstetrics, etc., will be treated of in future volumes along with the subjects to which they relate. In the division of forensic medicine the classification of Casper has been followed,—*i.e.*, *Thanatological*, including those branches in which the subject of inquiry is a dead body (contained in the present volume). *Bio-thanatological*, relating to questions concerning both dead bodies and living persons (in the second and third volumes). *Biological*, relating to living persons (in the second and third volumes). The applications of the microscope to forensic medicine will be treated of in the second volume. The fourth volume will contain the division relating to toxicology."

The article upon the legal relations of the physician and surgeon is written by T. C. Becker; that of law and confidential communications, by Charles A. Boston; and the synopsis of laws concerning and governing the practice of medicine, by W. A. Poste and Charles A. Boston. These three articles are placed under the head of medical jurisprudence, while in forensic medicine we have articles upon the legal status of the body, by T. C. Becker; the powers and duties of coroners, by A. Becker; the method of performing medico-legal autopsies, by H. P. Loomis; personal identity, by J. C. Ross; the determination of the time of death, by H. P. Loomis; the medico-legal consideration of wounds, by G. Woolsey; the same of gunshot wounds, by Roswell Park; death by heat, cold, or starvation, by A. E. Stoddard; the medical relations of cold to electricity, by E. C. Boulard; the medico-legal consideration of death by mechanical suffocation, by D. S. Lamb; and death by submersion or drowning, by J. C. Ross.

It is stated that in the careful autopsies which have been made in cases of criminals executed by electricity, no important changes, macroscopical or microscopical, other than mechanical ones caused by the electric current, have been noted. A few petechial spots are found to be under the pericardium, in the heart-tissue, and sometimes in the pleura. In these cases the body does not usually cool for from twenty-four to forty-eight hours, and *rigor mortis* quickly disappears, lasting in some cases as

short a time as two hours. Rarely the force of the contraction at the time of the shock is such as of itself to ruptnre muscles or tendons, and it might even fracture bones or dislocate joints already predisposed.

As to that portion of the present volume which treats of the jurisprudence of medicine,—that is, of the principles of law defining the reciprocal rights and duties arising out of, as well as those incidental to, the relation of physician and patient, together with the statutory provisions of the various States and countries regulating the practice of medicine and surgery,—it may be said in respect of the first division of this title, that, while the great principles of law controlling the conduct of the medical practitioner, as they appear in the decisions of the courts, are stated with accuracy, though not always with the clearness that could be desired, it would have added materially to the value of this portion of the work, so far as the general practitioner is concerned, to have illustrated the application of these principles by the judicious selection of groups of facts from the adjudicated cases.

In the second division of this title, or that relating to the statutory provisions affecting the practice of medicine, synopses of the different medical acts are given. This we consider a serious defect. In a book professing to be exhaustive, as this one does, nothing short of the complete text of the medical acts of the different States, at least, should have been admitted. Those acts, as they come from the law-making body, are expressed in language as brief and concise as is consistent with that clear and detailed statement of their provisions necessary for the full and accurate information of the physician, who must conform to their regulations, if he would escape their penalties. It must be clear, therefore, that any synopsis, however carefully made, is inadequate, liable to mislead, and, for this reason, dangerous.

It is no answer to this objection to say that the complete text of all the medical acts would have increased the bulk of the volumes to an undue size, for the employment of a smaller size of type would have permitted the complete text of the acts without occupying more space than is allotted to the present synopsis. For the anatomy acts, on the other hand, a synopsis is sufficient, inasmuch as they have not the same practical importance for the physician as the medical acts.

We think it a mistake in a composite work of this sort that more territory was not covered in the selection of the various writers. It will be interesting to compare these books with another elaborate work upon the same subject which is shortly to be published by another New York firm. The work will undoubtedly be quoted in medico-legal trials of the future, and deservedly so.

L. D. B.
H. W. C.

Orthopedic Surgery. A Manual of Orthopedic Surgery, for Students and Practitioners. By James K. Young, M.D., Instructor in Orthopedic Surgery, University of Pennsylvania, Philadelphia. In one octavo volume of 446 pages, with 285 illustrations. Cloth, $4.00; leather, $5.00. Philadelphia: Lea Brothers & Co., 1894.

Dr. Young has produced so excellent a work upon American orthopædic surgery that it seems almost unfair to criticise; yet it is unfortunate that he has adopted the misleading orthography which tends to narrow this branch of surgery, not only in the minds of the laity, but with the profession as well. In spite of the tendency of the present day to avoid the use of diphthongs, the word orthopædic, derived from the Greek παις, παιδος, a child, demands the retention of the diphthong to assist in the proper explanation of its origin: to limit it to pes, pedis, the foot, is erroneous, and it is important that the spelling should suggest the correct derivation.

For class-teaching and for students, as well as for the private practitioner, the work is full and suggestive, and the two hundred and eighty-five illustrations (many of them new and original) add greatly to the proper understanding of the several subjects discussed. The author has wisely included the deformities following

the various forms of paralysis, and he has given full attention to the late deformities of rickets, syphilis, etc. Necessarily the consideration of joint-diseases, including those of the vertebra, occupies a large portion of the work. The suggestions in regard to treatment are practical and helpful, both in regard to surgical and mechanical measures of relief. The author judiciously advises that whenever surgical procedures can assist the application of mechanical means, operative interference should be instituted either primarily or at such period in the course of the disease as it can be rendered useful. These surgical procedures are exceedingly important, and in many cases are absolutely essential. The author's conclusions in regard to tarsectomy, that it should never be performed before five years of age, are judicious and wise. In young children the limb can undoubtedly be straightened without this mutilatory operation and sacrifice of bones. After section of the sterno-mastoid for torticollis, gymnastic movements and massage of the muscles of the neck are very properly recommended as absolutely essential to prevent relapse. The various pathological conditions are thoroughly considered, and the tubercular element in joint-disease is recognized as established. In regard to excision of the hip, the author takes the well-grounded conservative surgical position that incision, erasion, and drainage, together with thorough mechanical treatment, should have precedence over excision, reserving the more mutilatory operation for serious cases.

We are very glad to welcome this latest addition to American surgery, which shows that our country is still far in the advance in this important branch.

De F. W.

Ueber das Wesen der Paroxysmalen Hämoglobinurie. (The Nature of Paroxysmal Hæmoglobinuria.) By F. Chvostek.

The conclusions of this interesting and complete monograph of 105 pages may be summed up as follows:

1. The nature of this disease lies in the abnormal change in the blood and circulation. 2. The altered conditions of the blood manifest themselves by the diminution in resistance of the red blood-corpuscles to mechanical influence, more especially the diminished resistance to the influence of cold. 3. This diminished resistance of the red blood-cells to mechanical influence is true of only a portion of the blood-mass. 4. This abnormal condition of the blood and the red blood-corpuscles may be due to a variety of causes, such as syphilis, malaria, inanition, infectious diseases, pyæmia, neoplasms, etc. 5. Microscopic change in the blood-cells of patients suffering from this affection means simply the result of evidence of the destruction of the red blood-cells and numerous shadow cells. 6. There is no anæmia of hæmoglobin between the attacks. 7. During the attack there may be hæmoglobinæmia, and evidences of red blood-cell destruction. 8. The blood during the attack coagulates more quickly than normal. 9. Examination of the blood from the finger, where obstruction to circulation had been produced by ligature, showed destruction of the red blood-corpuscles. 10. There is increased innervation of the peripheral blood-vessels in consecutive congestion of the internal organs. In certain cases this peripheral blood-vessel change is absent, the reason for which is unknown. 11. The contraction of the blood-vessels remains during the entire attack until a feeling of warmth and perspiration appears, at which time the rapid dilatation of the vessels occurs. 12. The red blood-cell destruction goes on more rapidly in those places where congestion occurs, and the dissolved hæmoglobin has a direct effect upon the circulation. 13. The increased amount of carbonic acid present favored the solution of the cellular element of the blood. 14. At times the destruction seems largely to be confined to the kidney. 15. Symptoms of an attack may be divided into two groups,—namely, (*a*) those due to abnormal dilatation of the blood-vessels, such as superficial ischæmia and ingestion of the internal organs, and (*b*) those produced by the toxicity of the hæmoglobin and products of the destruction

of the red blood-cells. As these substances are excreted with varying degrees of rapidity in different patients, the symptomatology must vary correspondingly. 16. The form of paroxysmal hæmoglobinuria which is brought on by walking is analogous to those cases of transitory albuminuria, and is due to the influence of position producing disturbance in the internal organs, which in its turn leads to destruction of the red blood-cell owing to its lessened resistance. 17. The cause of the abnormal contraction of the vessels may be due to the increased irritability of the vaso-motor centre. The frequency of syphilis as the cause of hæmoglobinuria may be explained by the frequency with which it produces simultaneously changes in the blood and blood-vessels. J. D.

The Johns Hopkins Hospital Reports. Report in Neurology, II. Baltimore, 1894. 4to, 127 pp.

This report comprises eight papers, all by one author, Dr. Henry J. Berkley, and each one a testimonial to the industry and painstaking investigations of this histologist. The first paper, on Dementia Paralytica in the Negro Race, has already been noticed in this magazine (June, 1894, page 372). The remaining papers are studies in histology, in which are demonstrated the intrinsic nerves of the liver, of the lungs, of the cardiac ventricles in certain vertebrates; the intrinsic nerves of the submaxillary gland of the mouse, the thyroid gland of the dog, and the pituitary gland. By using a stain of picric acid and a hardening solution of bichromate of potash and osmic acid, details of which are fully given, excellent results were secured as illustrated in the plates.

The intrinsic nerves of the liver are separable into four divisions, all connected together and morphologically alike. The first division is that to the portal vein, with its manifold ramifications, inter- and intra-lobular; the second is to the branches of the hepatic artery; the third is to the distribution to the biliary ducts; while the fourth and last is the terminal plexus and proper endings between the hepatic cells themselves, which are derived mainly from the ramifications of those nerves that belong to the portal system, and to a much lesser extent from the branches that follow the hepatic arteries and the biliary ducts. Medullated nerve fibres have not been demonstrated within the proper limit of the liver, the silver method and the osmium-copper-hæmatoxylin stain having failed completely to bring them into view.

G. H.

Practical Manual of Mental Medicine. By Dr. E. Regis, formerly Chief of Clinique of Mental Diseases, Faculty of Medicine, Paris; Laureate of the Medico-Psychological Society and of the Faculty of Medicine of Paris, etc.; with a Preface by Mr. Benjamin Ball, Clinical Professor of Mental Diseases, Faculty of Medicine, Paris. Second Edition. Thoroughly revised and largely rewritten. Authorized Translation by H. M. Bannister, A.M., M.D., late Senior Assistant Physician Illinois Eastern Hospital for the Insane, etc., with Introduction by the Author. Press of *American Journal of Insanity*, 1894.

As stated by the translator, this is the first translation in English of any modern standard French work on mental diseases and their treatment. It is certainly a great gain to American students and physicians, so largely dependent, heretofore, on English authors for their literature in this science, to have ready access to such a well-arranged, lucid, and practical treatise, which is considered in France a model of its kind.

Part First opens with a brief history of the progress of the study of mental alienation, extending to the present time, arranged in four epochs. This *résumé* is styled *mental pathology*. Such an historical sketch showing the very gradual development of our knowledge of insanity is a wise introduction for those who begin the

study of this science. General Pathology. This comprises the natural history of mental diseases in general. The distinction is shown between mental alienation and insanity. Mental alienation is the genus of which all the alterations of the intelligence are, so to speak, the species. Although scientifically distinct, these terms, as is commonly the case with psychological terms, are usually employed interchangeably. Mental alienation includes all the alterations of the mind from the normal. Insanity is a species of alienation. Insanity signifies the loss of reason occurring as a disease in an individual hitherto sane. An imbecile is the subject of mental alienation, but is not insane. We have seen among our patients idiots and imbeciles the subjects of mania and melancholia. Mental alienation, then, "is the total of the pathological conditions characterized by disorders of the intelligence." His definition of insanity is couched in few words. It "is a special disease, is a form of alienation characterized by the accidental, unconscious, and more or less permanent disturbance of the reason." It is to be commended for its brevity. Under the section *Progress* is shown that the constitutional alienations are durable and permanent conditions. Only the generalized insanities can be acute, while the systematized insanities are chronic from the beginning. Hence only the generalized insanities are capable of cure. The author's remarks as to the lucid interval are very clear, and are repeatedly borne out by our observations of the insane. It is comparatively brief, and is characterized by a complete cessation of the symptoms of the attack. Some of our American alienists deny the existence of such an interval. How important in a medico-legal point of view! Certainly the fact that the symptoms are not present would lead to no other conclusion than that the disease does not exist during this interval. We fear that the courts are sometimes misled by certain so-called experts.

There are those who deny the existence of true moral insanity. Truly, as the author states, "the insanity of the feelings and affections is not of itself more absurd than is that of ideas. There are as many insane types of feeling as there are modes of activity in the emotional nature of man." The author's diagrams, which are lucid pictures of the variations in depression and exaltation of the generalized insanities, are far truer to nature than words can express. With the same are combined records of pulse, temperature, respiration. Such a picture-history should be kept of each acute case, as it is invaluable for future reference and comparison. The author's classification is most complete and rational, and is to be commended to our students for its clearness. Let us have some more good things from our French *confrères*.

We have only this to say by way of criticism: An open book should remain open when so placed on a level surface. The publishers have not made a convenient book for the busy man to work with. W. H. H.

Biological Lectures and Addresses. Delivered by the late Arthur Milnes Marshall, M.A., M.D., D.Sc., F.R.S., Professor of Zoology in Owens College; late fellow of St. John's College, Cambridge. Edited by C. F. Marshall, M.D., B.Sc., F.R.C.S. London: David Nutt. New York: Macmillan & Co.

These lectures—many of them delivered before societies and published in their transactions, many here seen in print for the first time—form a volume of great interest, and one which cannot fail to start the biologic instinct, if any lie dormant in the reader. They are in the truest sense science made popular, not by dragging her down to the lower level, but by her effort to raise the hearer out of his apathy to that high level on which the true student stands. More and more it becomes apparent that Biology stands as the great foundation of true medicine. Its study is attended with consequences often remote, unexpected, and far-reaching. It threatens a complete revolution to-day in our thought and practice.

Facts that seemed to the student isolated and of no particular moment, when brought in contact with other observations, suddenly strike fire and light up some

dark corner, or put out at once and forever the old-fashioned glimmer which has been posing as a satisfactory illumination.

The chapters in this book on Embryology, as an aid to anatomy, on Inheritance, on Animal Pedigrees, on some recent developments of the cell theory, will be of great value to the medical reader who has suffered his education in this line to lapse.

The chapter on "Death" will interest and instruct any reader,—it is suggestive, —while the chapter on the shapes and sizes of animals will serve to show how Biology leads us on to definite conclusions which would have been impossible from intuition or abstruse reflection. The author's statement of Weismann's theory in the Lecture on Death deserves especial notice for its clearness, and, in fact, in every chapter he shows that gift. So common it would seem among his countrymen, so rare with us, of writing a scientific treatise or a studied article in a form which entices and charms us by its prose elegance, its ingenuity of argument, and its perfect simplicity of style.

E. W. W.

Students' Library. (*Lancet*, September 1, 1894.)

The following list of books, given in the Students' number of the *Lancet*, contains the text-books and works of reference which are recommended by this periodical to students studying medicine:

Anatomy.—Quain's (Jones) Elements of Anatomy. The tenth edition. Edited by Edward Albert Schäfer and George Dancer Thane. Anatomy, Descriptive and Surgical. By Henry Gray. The thirteenth edition. Re-edited by T. Pickering Pick. A Text-book of Human Anatomy: Systematic and Topographical. By Alexander Macalister. Tablets of Anatomy. By Thomas Cooke.

In Practical Anatomy the student has the choice of text-books by Ellis, Heath, Cleland, and Cunningham. Ellis's Demonstrations of Anatomy. Edited by Professor Thane. Cunningham's Dissector's Guide has the advantage of being published in separate volumes. Heath's Practical Anatomy. Professor Cleland's Directory for Dissection. This is purely a guide, and will be found most useful in the dissecting-room. Applied Anatomy may be studied from the works of Treves, Bellamy, Holden, or Maclachlan. Landmarks, Medical and Surgical. By Luther Holden. Surgical Applied Anatomy. By F. Treves. Ward's Outlines of Osteology. Human Osteology. By Luther Holden.

Physiology.—Text-book of Physiology. By Professor Michael Foster. An Introduction to Human Physiology. By Augustus Waller. Human Physiology. By Professor Landois. Text-book of Physiology. By John Gray McKendrick. Kirke's Hand-book of Physiology. Edited by Morrant Baker and Vincent Harris. Manual of Physiology. By G. F. Yeo.

Physiological Chemistry.—A Text-book of the Physiological Chemistry of the Animal Body. By Arthur Gamgee. Text-book of Chemical Physiology and Pathology. By Professor W. D. Halliburton. The Chemical Basis of the Animal Body. By A. Sheridan Lea.

Histology and Embryology.—The Elements of Embryology. By Professor Michael Foster. Practical Physiology. By Professor Michael Foster. Outlines of Practical Physiology. By Professor William Stirling. Outlines of Practical Histology. By Professor William Stirling.

Chemistry and Physics.—Chemistry: General, Medical, and Pharmaceutical. By John Attfield. Organic Chemistry. By Ira Remsen. Outlines of Organic Chemistry. By H. F. Morley. Notes on Analytical Chemistry for Students of Medicine. By A. J. Bernays. Practical Organic Chemistry. By S. Rideal. Elementary Text-book of Physics. By J. D. Everrett. Elementary Lessons in Electricity and Magnetism. By Sylvanus Thompson.

Materia Medica and Therapeutics.—Text-book of Pharmacology and Therapeutics.

By T. Lauder Brunton. Handbook of Therapeutics. By Sidney Ringer. White's Materia Medica. Bruce's Handbook of Pharmacology, Materia Medica, and Therapeutics. Garrod's Essentials of Materia Medica and Therapeutics.

Medicine.—Principles and Practice of Medicine. By the late Hilton Fagge and P. H. Pye Smith. Theory and Practice of Medicine. By J. S. Bristowe. The Principles and Practice of Medicine. By W. Osler. Text-book of Medicine. By Professor Strümpell. Handbook of the Theory and Practice of Medicine. By F. T. Roberts. Manual of the Practice of Medicine. By F. Taylor. Elements of Practical Medicine. By A. H. Carter. Guide to Practice of Medicine. By M. Charteris. Dictionary of Medicine. Edited by Richard Quain, assisted by F. T. Roberts and J. Mitchell Bruce. Dictionary of Practical Medicine. By J. K. Fowler. Clinical Manual. By James Finlayson. Clinical Diagnosis. By Judson Bury. Manual of Medical Diagnosis. By Professor H. Vierordt. Medical Diagnosis: A Manual of Clinical Methods. By J. J. Graham Brown. Fenwick's Student's Guide to Medical Diagnosis. Edited by Bedford Fenwick. Physical Diagnosis: A Guide to Methods of Clinical Investigation. By G. A. Gibson and William Russell. Auscultation and Percussion. By Samuel J. Gee. Cardiac Outlines. By William Ewart. Clinical Diagnosis. By Professor R. von Jaksch. Guide to Examination of Urine. By J. Wickham Legg. Notes on Examination of Blood and Excreta. By Sidney Coupland.

Surgery.—System of Surgery. Edited by Timothy Holmes and J. W. Hulke. Dictionary of Practical Surgery. By C. Heath. The Science and Art of Surgery. By J. E. Erichsen. Moulin's Surgery. Treatise on Surgery. By T. Holmes. Manual of Practice of Surgery. By T. Bryant. Manual of Surgery. By F. Treves. Druitt's Surgeon's Vade-Mecum. Edited by Stanley Boyd. Index of Surgery. By C. R. B. Keetley. Guide to Surgery. By W. J. Walsham. Operative Surgery. By F. Treves. Surgical Operations. By A. E. J. Barker. The Operations of Surgery. By W. H. A. Jacobson. Guide to Surgical Diagnosis. By C. Heath. Surgical Diagnosis. By A. P. Gould. Minor Surgery and Bandaging. By C. Heath. Essentials of Bandaging. By the late Berkeley Hill.

Midwifery.—Herman's First Lines of Midwifery. Swayne's Obstetric Aphorisms. Donald's Introduction to Midwifery. Galabin's Manual of Midwifery. The Science and Art of Midwifery. By W. T. Lusk. The Science and Art of Midwifery. By W. S. Playfair. Text-book of Midwifery. By the late Otto Speelberg.

Gynæcology.—A Manual of Gynæcology. By Berry Hart and F. Barbour. Galabin's Student's Guide to the Diseases of Women. A Practical Text-book of the Diseases of Women. By Arthur H. N. Lewers. Clinical Gynæcology. By T. More Madden. A Treatise on Gynæcology. By S. Pozzi. Diseases of the Ovaries. By Lawson Tait. Abdominal Surgery. By J. Greig Smith. The Surgical Diseases of the Ovaries and Fallopian Tubes. By J. Bland Sutton. The Diagnosis and Surgical Treatment of Abdominal Tumors. By J. Bland Sutton. The Diagnosis and Surgical Treatment of Abdominal Tumors. By Sir Spencer Wells. Clinical Lectures on the Diseases of Women. By J. Matthews Duncan.

Pathology.—Manual of General Pathology. By Joseph Frank Payne. A Text-book of Pathology, Systematic and Practical. By Professor D. J. Hamilton. A Text-book of Pathological Anatomy and Pathogenesis. By Professor Ernst Ziegler. Translated and Edited for English Students by Donald MacAlister. General Pathology. By German Sims Woodhead. A Text-book of Morbid Histology for Students and Pactitioners. By Rubert Boyce. Lectures on Surgical Pathology. By Sir James Paget. Revised and Edited by Professor Wm. Turner. An Introduction to General Pathology. By John Bland Sutton. Lectures on Pathological Anatomy. By Samuel Wilks. Lectures on Pathology. By the late Henry Gawen Sutton. A Manual of Pathology. By Joseph Coats. Practical Pathology. By John Lindsay Steven. Practical Pathology and Morbid Histology. By Heneage Gibbes. Elements of Surgical Pathology. By Augustus J. Pepper. A Handbook of Surgical

Pathology. By W. J. Walsham and d'Arcy Power. Pathological Anatomy of Diseases. By Norman Moore. An Introduction to Pathology and Morbid Anatomy. By T. Henry Green, M.D. Revised and Enlarged by Stanley Boyd. Section Cutting and Staining. By Walter S. Colman.

Bacteriology.—Ptomaines, Leucomaines, and Bacterial Proteids. By Professor Victor Vaughan and Assistant Professor Frederick G. Novy. Practical Guide to the Demonstration of Bacteria in the Animal Tissues. By Dr. H. Kühne. Woodhead's Pathological Mycology. Salomonsen's Bacteriological Technology for Physicians. Manual of Bacteriology for Practitioners and Students. By Professor S. L. Schenk. Translated by W. R. Dawson. Studies on Fermentation. By P. Schützenberger. Bacteria and their Products. By German Sims Woodhead. A Manual of Bacteriology. By George M. Sternberg. Manual of Bacteriology. By Edgar M. Crookshank.

Forensic Medicine.—Manual of Medical Jurisprudence. By A. S. Taylor. Edited by T. Stevenson. Principles of Forensic Medicine. By W. A. Guy and David Ferrier. Handbook of Forensic Medicine. By A. Husband.

A. W. P.

NOTICES.

PRELIMINARY REPORT OF FIVE CASES OF DIPHTHERIA TREATED WITH BEHRING'S AND ARONSON'S ANTITOXIN AT THE MUNICIPAL HOSPITAL. SERVICE OF DR. WM. M. WELCH, PHILADELPHIA, PA.

Case I.—F. N., aged two and a half years, female, was admitted to the Municipal Hospital November 2, having been ill for about forty-eight hours. Exudate in throat covering both tonsils, the uvula, and the anterior half arches. Considerable discharge from the nose. Patient's color pale; glands on both sides of neck slightly swollen. Temperature 100.4° F.; pulse 120, and respiration 36. At 6 P.M., ten cubic centimetres of Behring's antitoxin were injected under the skin. The patient was given no other treatment save stimulants and nourishment. Temperature for the next twenty-four hours varied from 98$\frac{1}{5}$° to 101.4° F.; pulse from 100 to 136, and respiration 20 to 32. There was no change in the appearance of the exudate in the throat nor in the general condition of the patient. The discharge from the nose increased, and became slightly bloody, and the breath was very offensive. During the next twenty-four hours the temperature varied from 98° to 101° F.; pulse 114 to 130; respiration 20. There was no change in the exudation in the throat nor in the discharge from the nose. On November 5, at 1 P.M., another injection of 4.5 cubic centimetres of Aronson's antitoxin was given. The patient's condition remained about the same as on the previous days, save that the discharge from the nose increased and was nearly all blood, and there was bleeding from the mouth also. The temperature varied from 99$\frac{3}{5}$° to 102$\frac{3}{5}$° F.; pulse 120 to 140, and respiration 24 to 32. November 6, no improvement. Temperature 100°; respiration 24; pulse 120. Child very ill. The regular treatment was employed after the 6th, with the addition of strychnine hypo-

dermically and hydrogen peroxide locally. On the 8th and 9th additional doses of the antitoxin were administered. Discharge from nose decreased; general condition about the same. Stimulation was pushed. The child died from exhaustion at 10 P.M., November 10.

CASE II.—E. G. T., female, aged two years and eight months. Admitted November 2, the second day of illness. Exudate dirty-yellow color, covering the tonsils and uvula. Temperature 100°; pulse 160; respiration 36. At 6 P.M., ten cubic centimetres of antitoxin injected hypodermically. The temperature, taken every hour, varied from $98\frac{5}{5}°$ to $100\frac{1}{5}°$; pulse 112 to 138; respirations 20 to 32. November 6, the exudate in the throat had entirely disappeared, the discharge from the nose had nearly ceased, and the patient was doing well. In addition to the antitoxin, this case received internally tinctura ferri chloridi, hydrargyri chloridi corrosivi, and whiskey; locally, hydrogen peroxide. The diet was mostly milk. November 9, patient doing nicely, but had developed scarlet fever.

CASE III.—A. S., colored; male; aged thirteen; sick three days. Profuse dark exudate, covering tonsils, the uvula, and half arches. Routine treatment, with the injection of ten centimetres of the antitoxin at 1.10 P.M. on November 6. On the 9th but little exudate was seen.

CASE IV.—B. M., aged five; twentieth day of the disease. On November 6, ten cubic centimetres of the antitoxin injected. Some exudate in the nose, and a large amount of albumen in the urine. Regular treatment in addition. Was much better November 9.

CASE V.—J. H., aged eight; seventh day of the disease. Serum injected at 12 M. on the 9th. No febrile reaction followed. The larynx was involved in this case. Condition in the evening about the same.

A bacteriological examination of scrapings from the throat of each case showed the Klebs-Lœffler bacillus. On November 12, Cases II., III., IV., and V. are all doing well.

R. W. BEMIS, M.D.,
Resident Physician.

NOTE TO CONTRIBUTORS.

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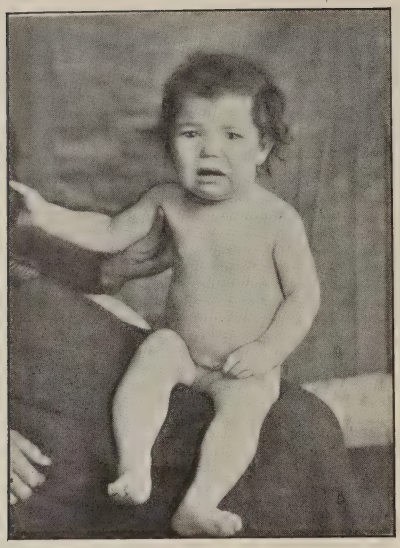


FIG. 1.—Isabella McG. Sporadic cretinism. Before thyroid feeding.



FIG. 2.—Isabella McG. Sporadic cretinism. Before thyroid feeding.



FIG. 3.—Isabella McG. Sporadic cretinism. After thyroid feeding.



FIG. 4.—Isabella McG. Sporadic cretinism. After thyroid feeding.

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ORIGINAL COMMUNICATIONS.

SPORADIC CRETINISM, AND ITS TREATMENT BY THYROID EXTRACT.

BY WHARTON SINKLER, M.D.,
Philadelphia, Pennsylvania.

Sporadic cretinism, as is well known, is generally met with as an endemic disease, and exists to some extent in almost every part of the world. In Europe it is very prevalent, and seems to find its chief habitat in regions in which goitre is also endemic. In the valleys of the Alps, Vosges, and Pyrenees it is most common, but it is also met with endemically in Spain, Austria, Germany, the Netherlands, and Russia. A few cases occur in Scotland, but in England it is rare. Singularly enough, it used to exist in Somerset, England, but at this place it is now extinct. It is said that the disease is met with on the continent of Asia, on the northern and southern slopes of the Himalaya Mountains, and a few cases are to be found in South America. In North America it is exceedingly rare, and it is doubtful if it has ever existed as an endemic disease in this country. It has been stated that cretinism occurs in the valleys of Vermont and Massachusetts, and in California; but Osler[1] has shown that the authorities for these statements were probably misinformed as to the extent of the disease in the places cited.

Sporadic cretinism occurs occasionally in all countries. Within the past few years a number of cases have been reported in this country. Osler,[2]

[1] American Journal of the Medical Sciences, November, 1893.
[2] Loc. cit.

who has gone to considerable trouble to collect all the cases which have been described in the United States, has succeeded in obtaining the reports of eight cases, and has placed on record three other cases which have come under his own observation. Lloyd[1] has reported one case and Townsend[2] has reported another. Mills[3] refers to several cases which he has seen and studied, some of which he speaks of as "cretinoid idiocy," which he saw in the institutions for feeble-minded children at Elwyn, Pennsylvania, and Vineland, New Jersey. I myself have seen two cases, one of which is that reported by Lloyd.

Cretinism may be defined as a chronic disease, characterized by a form of arrested mental and physical development. The patient is of dwarfish stature, and the head is unduly large and misshapen, being flattened on top and rather square in shape. The hair is coarse and thin, the skin is rough, dry, and wrinkled, thick and œdematous in many cases. The tongue is large, and in many subjects constantly protrudes from the mouth. Fatty pad-like deposits exist over the clavicles, and the abdomen is large and pendulous. The thyroid gland is usually absent, but it may be enlarged. The spine is curved, the lower cervical and upper dorsal region forming a hump, and the lumbar region making a deep anterior curvature. The temperature is usually low. In the case referred to by Bury[4] the temperature was 95° or 96° F., with a daily variation less than normal. The teeth are erupted late, and the anterior fontanelle does not close until the child is four or five years old. The epiphyses of the long bones are enlarged, and the tibiæ are bent as in rickets.

The intelligence of cretins is of an exceedingly low type, although it varies in different cases. Many are deaf and dumb, and show simple idiocy. The disposition may be mild, but cretins are often irritable and liable to outbursts of temper. They are generally of an affectionate but jealous disposition. The symptoms of cretinism may exist at birth, but as a rule they do not appear until the child is six months of age.

Endemic goitre occurs in districts where cretinism prevails, and the knowledge of this fact gave rise to the idea that cretinism might depend upon disease of the thyroid gland. Professor Kocher called the attention of the profession to the fact that in persons upon whom the operation of thyroidectomy had been performed all the symptoms resembling those of cretinism took place.

It has only been within the past few years that the connection between cretinism and myxœdema has been recognized. Sir William Gull seems to have suspected this relationship when he wrote, in 1873, on "A Cretinoid State Supervening in Adult Life in Women;" but later, in the report of the

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[1] International Clinics, vol. ii., series ii.

[2] Archives of Pediatrics, November, 1892.

[3] American Text-Book of Diseases of Children.

[4] Cyclopædia of the Diseases of Children, vol. ii., p. 280.

Clinical Society of London on myxœdema, in 1888, Ord, who wrote the final report, states that "there is strong evidence that myxœdema, sporadic cretinism, endemic cretinism, cachexia strumipriva, and the operative myxœdema of animals are several species of one genus, and that such clinical differences as exist between them are due to causes already sufficiently set forth, and that the one pathological fact common to all of these conditions is the occurrence of morbid processes, or of operations involving the annihilation of the function of the thyroid body." From the condition of the bones and the late cutting of the teeth, it is evident that the disease is allied to rickets. Barlow has reported cases of fœtal rachitis which are much like sporadic cretinism.

The treatment of cretinism has been most unsatisfactory; indeed, the disease has been regarded as incurable, and susceptible of but little help. So recently as 1890, Bury[1] says, "When fully developed, cretinism is incurable, but is capable of amelioration by suitable treatment." He advises that cretin children should be placed in asylums for the feeble-minded, and recommends cod-liver oil, tonics, and open air.

The fact having been established of the pathological identity between cretinism and myxœdema, the next step forward was in its treatment. The extraordinary results which were obtained in the treatment of myxœdema by the ingestion of the thyroid gland of animals, which certainly constituted an era in therapeutics, made it seem probable that the same measure would prove useful in cretinism. As is well known, the raw thyroid gland of the sheep was originally employed by Murray, but since then it has been found that an extract of the gland could be used which is equally successful in its result and much less unpleasant to take. A dry extract of the gland is generally employed, but a glycerin extract is also used. The latter has the disadvantage of being rather more expensive than the desiccated extract.

The following case has been treated with thyroid extract, and the results are so remarkably satisfactory that it seems worthy of being placed on record. Isabella McG. was born June 16, 1890. The mother is thirty-two years of age and is healthy; the father is forty, a vigorous man, and has always been temperate. There is no history of hereditary disease on either side, except that several deaths from consumption have occurred in the father's family. She was brought to the Orthopædic Hospital and Infirmary for Nervous Diseases, Out-Patient Department, July 3, 1893. She is one of four children, the eldest of whom died at two years of age; the child was injured in delivery, and was idiotic. The second child is eleven years of age, and the third is six. Both of these children are strong and healthy.

The patient was born at full term, but the labor was difficult, owing to the very large size of the child, who weighed, according to the opinion of

[1] Loc. cit.

the physician in attendance, fourteen pounds. Forceps were used in delivery, but no external injury was sustained. She was healthy until six months of age, when she had catarrhal bronchitis. She had no intestinal or stomach trouble, and was breast-fed, but was given, in addition to the mother's milk, arrow-root, corn-starch, and other food after the age of four months. When six months old, the mother noticed that she was not as bright as other children; she never has been able to walk and has never attempted to creep. She never had convulsions, and has always been a quiet but high-tempered child. In attempting to stand by chairs, or to walk, the child would frequently have falls, and she almost always struck on the back of the head, after which she turned white and vomited. Her first tooth was cut at twenty-one months.

Condition on Examination.—The child is three years and one month old. She is unable to walk, except when held by both arms. She cannot talk, and apparently does not hear. She sees, but is listless and does not notice things about her. She is pale and anæmic; the head is square and rachitic, flattened anteriorly and posteriorly. The occipital bone is very prominent and seems like a wedge between the parietal bones. The anterior fontanelle is open and large. The diameters of the head are as follows:

Bifrontal	10.5	centimetres.
Biparietal	13	"
Occipito-frontal	17.3	"
Circumference	50	"

The thyroid gland cannot be felt. The patient has twelve teeth,—eight incisors, and two upper and two lower molars. The chest is rachitic, and the abdomen large and distended. There is a marked antero-posterior curvature. The face is puffy and swollen under the eyes, the lips are thick, and the lower lip pendulous. The general appearance is so markedly myxœdematous that one of my assistants remarked the striking resemblance of the child to a case of sporadic cretinism in the Philadelphia Hospital, which is well known to the profession here. The patient was ordered cod-liver oil and elixir of cascara for obstinate constipation. (Figs. 1 and 2.)

The patient took cod-liver oil quite steadily for four months, at the end of which time it was noticed that there was but little change in her condition. She was not brought to the hospital for several months, and when seen again, March 19, 1894, the following notes of the child's condition were made:

The patient is more myxœdematous than formerly. The tongue is large and thick and protrudes from the mouth the greater part of the time. There seems to be some difficulty in swallowing. The tibiæ are much bowed. The anterior curvature in the lumbar region of the spine is more conspicuous. The skin of the whole surface looks thick and œdematous, and is dry and wrinkled. At the ankles the skin is thrown into folds, as is shown very well in Fig. 2. The soles of the feet are dry and

wrinkled. All the epiphyses are large. The height of the child is thirty and two-eighths inches, and her weight twenty-six and one-half pounds. There is but little perspiration. There is some puffing under the eyes. The bridge of the nose is wide and flat.[1] The hair is exceedingly coarse and thin, and the scalp is smooth and shiny. In some places the scalp is quite bare. The teeth are small and rudimentary, and have not increased in number since the last note. Three of the teeth are decayed, and four are imperfectly erupted. The anterior fontanelle is still open and depressed. It measures one and a half by three-eighths of an inch. The diameters of the head are—

Biparietal	$13\frac{3}{8}$ centimetres.
Occipito-frontal	$18\frac{1}{2}$ "

She was ordered ten drops of a glycerin extract of the thyroid gland, so prepared that a fluidrachm represented one-half of a sheep's thyroid.

On April 23 the patient was ordered twenty drops of the extract three times a day.

On May 9 the child does not seem so well, her appetite is not good, and she is weak. The thyroid extract was then discontinued, and the treatment by cod-liver oil renewed.

As some untoward effects have followed thyroid feeding, I felt unwilling to push the remedy until I could have the child under immediate observation, and she was therefore admitted to the hospital on May 14, 1894. The thyroid extract was administered in varying doses, according to the condition of the patient. The glycerin extract was given part of the time and a desiccated extract was employed at other times. A daily record of the temperature was kept, and if the thermometer registered 100° F. or higher the thyroid extract was omitted until the temperature had fallen to normal. On several occasions the temperature rose to 102° without any apparent cause, unless it was attributable to the effects of the thyroid extract. The highest temperature reached was $102\frac{3}{5}$°. There were long periods in which for days the temperature was subnormal, the lowest having been $96\frac{2}{5}$°. Cod-liver oil has been given continuously, and easily digested food in the form of milk and beef juice has been the principal diet. The child has made very striking improvement in every respect, and Figs. 3 and 4 show, I think, very distinctly the change in the condition of the patient which has taken place in the past four months. She has improved not only physically, but mentally. She is much brighter and better tempered, and is beginning to understand quite readily anything that is said to her. Her attempts at articulation are not very satisfactory, and her vocabulary consists principally of "I won't" and "Go away."

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[1] The child's appearance answers well the description of Bury: "The eyes are wide apart and set, as it were, in the ends of a transverse gutter, the middle of which takes the place of the bridge of the nose,—the end of the nose broad and upturned."

She is of an affectionate disposition, and is much attached to the nurse who has immediate charge of her. Her height is now thirty-two and a half inches, which is a gain of two inches since her admission to the hospital; and she weighs twenty-nine pounds, a gain of two and a half pounds.

One of the most striking changes which has taken place in the child is the improvement in the quality and quantity of her hair. The head is now thickly covered with soft curly hair, and the scalp appears to be in a healthy condition. The face is much less puffy, and the tongue is kept within the teeth. There is less swelling of the lips. The myxœdematous condition of the skin has disappeared to a great extent, and the folds of loose skin about the joints—more especially the ankle-joints—have disappeared. There is undoubtedly great room for improvement, and, of course, it is a question as to how far the gain will extend in a case like this.

Dr. J. L. Gibson[1] writes of a case of sporadic cretinism in a male which he saw at two years of age, and which was again brought to him at the ages of four and six years. He speaks of the marked progress of the disease during the four years, and this is well shown in photographs taken at two, four, and six years. After transplanting both lobes of a lamb's thyroid into the pectoral muscle, he says, the improvement was immediate, and continued for about three months, when it practically ceased.

After a second grafting, this time into the peritoneal cavity, the improvement again began, and at the end of four months nearly all the cretinoid symptoms had disappeared.

Dr. Affleck[2] showed a case of cretinism, in a man, to the Edinburgh Medico-Chirurgical Society, in which three implantations of thyroid gland had been made, and he noted great improvement in a short time.

Dr. W. W. Ord[3] gives an account of the treatment of four cases of sporadic cretinism with thyroid gland. Case I. was a female six and a half years of age. In 1892 she had a small piece of human thyroid implanted under the pectoral muscle. There was great improvement for a few weeks, but this stopped after the absorption of the gland. In 1893 she was again placed on the thyroid treatment, now by feeding the raw pounded gland, and after a few weeks by giving a powdered extract. In a week improvement was again noted, and showed in the skin, hair, and general nutrition. She gained about one-half pound in weight per week. In three months she stood alone, and soon began to walk and talk.

Case II. was a male three years old. He was both mentally and physically deficient. He advanced rapidly under the same treatment. He had gained one and a half pounds in a short time, the growth still continuing, and soon became as intelligent as other children of his age.

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[1] British Medical Journal, 1893.

[2] Ibid.

[3] Lancet, London, 1893.

Case III. was a male nine years of age. He had the general symptoms, and a remarkably enlarged tongue. His treatment was a five-grain tablet of an extract of thyroid once daily. The swelling of the tongue disappeared in two weeks, and the nutritive and intellectual growth was rapid.

Case IV. was a male of nine years. With the same treatment he lost weight at first, and then gained rapidly. He grew one and a half inches in four months.

Dr. Patterson [1] gives an account of a male patient, nineteen months old, in whom there had not been any growth in the last eight months. He noticed improvement in the expression of the face and in the size of the tongue after the third dose of a thyroid extract, of which ten grains were given daily. In one month there was general improvement, with signs of teething, and at the end of eight months he had sixteen teeth, tried to walk, and could speak a few words.

Dr. J. E. Hellier [2] treated for one year a female, two and a half years old, who was suffering from sporadic cretinism and rickets, with cod-liver oil, iron, arsenic, etc., without any change being noticed, except the cutting of four incisor teeth. A half drachm of a thyroid extract three times weekly being substituted, she at once changed in appearance. In one month the cheeks and eyelids were much less swollen and the tongue was smaller. In four months no œdema was noticed, she looked much brighter, had twelve teeth, and tried to talk.

Dr. Carmichael [3] reports a case of cretinism treated by hypodermic injection of thyroid gland and by feeding with the same substance. In this case the development was slow from birth,—rate of growth only one inch per year. Although eight years old, she looked like an infant. The skin, hair, and features were those of a typical cretin. She did not attempt to walk, and the intelligence was poor. The treatment was begun with a hypodermic injection of ten minims of thyroid extract twice weekly; but, on account of irritability and sleeplessness, the injections were reduced to ten minims weekly; then every other week; and, finally, three or four weeks intervened. After six months of this treatment, the raw gland, one lobe weekly, was given her for three months. The general appearance changed completely after the first few injections. In a few weeks the size of the abdomen had been reduced four or five inches in circumference, and the skin and hair were more healthy. In nine months she could walk, had grown four inches, and was much more intelligent.

Dr. A. J. Wood [4] speaks of a female twenty-three months old. She had stopped growing at seven months, and stopped creeping at nineteen months, which she had begun at twelve months. Her features were thick, the tongue protruded, and the hair was coarse; her height was twenty-six and one-eighth inches, and weight twenty-one and a half pounds.

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[1] Lancet, London, 1893. [2] Ibid. [3] Ibid.
[4] Australia Medical Journal, 1893.

A single lobe of a thyroid was planted under the breast. During convalescence from the operation, she began to crawl again, and the skin and hair began to change. She was afterwards fed on lamb's thyroids. In ten months from the time treatment was begun she had grown one and seven-eighths inches and gained two pounds.

Bramwell[1] cites a case, a female, sixteen and a half years old, who looked not older than a child of two and a half years. She was but twenty-nine and a half inches in height, and had very little mental development.

The treatment here was five minims of a thyroid extract once daily. In eight days there was a difference noted in the swelling of the face, lips, and tongue, and she noticed surrounding objects. In seventeen days she had lost three and a half pounds, and now there was very little œdema left. At the end of six months the skin and hair had changed; she looked two or three years older; had grown six and a half inches, and was very much more intelligent.

Railton and Smith[2] give the histories of two brothers, fourteen years and six years respectively.

The older boy had been under observation for two years; and Railton says the same description answered then as formerly, except a growth of three-fourths of an inch and an increase in weight of two pounds. With the raw thyroid and later with the powdered extract he improved at once, gaining both mentally and physically. In one month he had increased one inch in height, but lost in weight; but in one year he had gained the loss in weight and also four inches in height, with a corresponding mental gain.

The younger, whose history is given by Smith, was noticed to be mentally deficient at two years: he did not walk until two and a half years; and had other symptoms that were characteristic. He was treated with minced, fresh thyroid gland, one-eighth of a lobe, twice weekly. The improvement continued while the gland was given, which was for three months. When treatment was stopped for two months, the condition began to return; and when the child had been once more placed on the thyroid, an extract now being given, he improved so rapidly that in five months there were but few signs of the cretinoid condition remaining.

Dr. J. Thomson[3] records the following improvement in a male of nineteen years. His early development had been slow. He was but thirty-three and a half inches in height, and had grown very little since five years old. His mental condition was not so good as at five years. He was given one-quarter of a sheep's thyroid twice weekly, and this was cut down after a few months. In two months the swelling, skin, and hair had improved, and he had grown two inches. The result of a year's treatment was a growth of four and three-eighths inches in height, an increase in mental power, better health, and more natural appearance.

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[1] British Medical Journal, 1894.

[2] Ibid.

[3] Edinburgh Medical Journal, 1893.

Dr. Murrell[1] reports the case of H. T. Butlin, treated by injections into the thigh. Ten minims of a thyroid extract were injected twice a week for one month, and then one-sixteenth of a gland was made into a pulp and given twice weekly. The latter was gradually increased to one-half a gland. The patient was a male, thirteen and a half years old, thirty-eight inches in height, and weighed forty-two pounds. From the age of five to thirteen and a half years he had grown but six inches; while during eleven months of treatment he grew four inches, gained six pounds in weight, and improved mentally.

Dr. G. E. Anson[2] relates the following study of another cretin, a female, ten years old, forty-two inches high, and with other symptoms, who had grown but two inches in three years. She took a glycerin extract. In fifty-five days she had grown one and a quarter inches, and in one year four inches, or double the gain of the three previous years. The skin, hair, and general appearance had become those of a normal child.

Vermehren[3] used a powder precipitated from a glycerin extract of thyroid; and Robin[4] gave injections of the juice of sheep's thyroid, both with good results.

Dr. George W. Crary[5] relates a case of a child of five years, a female, who weighed eight pounds at birth, and seemed normal in every respect until she was six months of age. It was then noticed that she had ceased to grow, and was losing weight. When examined, at the age of five years, she was not larger than a ten months' infant. The symptoms of myxœdema were very conspicuous. Her disposition was good, but she had a very slight degree of intelligence, and paid very little attention to noises, or to even bright light. The temperature ranged between 97° and 98° F. She was given an extract of thyroid gland, and improvement began almost at once. At the end of six weeks, when the report was made, the child was much brighter mentally, and the œdematous swelling of the face and body was markedly reduced.

It is too short a time since the introduction of thyroid feeding in cretinism to form any opinion as to what the final results will be in such cases. Some observers state that cases improve to a certain point, and then remain stationary; but there is no doubt that in all the cases which have been reported remarkable changes for the better have taken place which have fully equalled, if they have not exceeded, those which have occurred in my patient. Even if no greater gain can be made than has been recorded in my patient and in those cases which I have quoted, we have every reason to rejoice in possessing a remedy which will accomplish as much as has been done with thyroid extract.

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[1] St. Bartholomew's Hospital Report, 1893.

[2] Lancet, London, 1894.

[3] Deutsche medicinische Wochenschrift, 1893.

[4] Lyon Médical, 1892.

[5] American Journal of the Medical Sciences, May, 1894.

PAINLESS CHILDBIRTH, OR STATUS OF THE MEANS TO PREVENT BIRTH-PAIN.[1]

BY WILLIAM B. DEWEES, A.M., M.D.,

Salina, Kansas;

A Founder and Life Member of the International Periodical Congress of Gynæcology and Obstetrics; Vice-President of the First Pan-American Medical Congress for Kansas, 1893; Founder (President 1891–2) Golden Belt Medical Society of Kansas; Fellow of the American Academy of Medicine; Member of the American Medical Association; Member of the American Public Health Association; Member of the American Association for the Study and Cure of Inebriety; Member of the American and Western Associations for Obstetricians and Gynæcologists, Kansas State Medical Society, etc., etc.

NATURE invariably imposes reciprocal requisites. The requisite which encompasses the whole duty of medicine is to prevent or to banish pain. The immediate duty and the ultimate aim of the cultivators of that branch of medical science termed obstetrics consist in preventing or banishing birth-pain, in facilitating the process of parturition, and in preserving life amidst the accidental difficulties to which pregnant women and their offspring are constantly exposed. To attain this end we must honor nature.

History records the fact that prior to the beginning of the present century, accoucheurs, teachers, and authors all believed that pain is necessarily connected with childbearing. Thus, they considered it prudent not to interfere; but in all cases—preternatural presentations and great deformities of the pelvis excepted—to trust entirely to nature. Even at the present day there are those who still hold this view. Has their study been such as to give an *ex-cathedra* authority to their utterances? That woman should suffer more than an equal share of the pain that afflicts the human race is an hypothesis inconsistent with nature. A careful study of facts, drawn from history, anatomy, physiology, and observations at the bedside of human suffering, has convinced the writer of the truth of the theorem that it is unnatural for women to suffer pain in parturition, and that birth-pain is caused by woman's disobedience to the natural law.

The doctrine of the necessity of suffering pain in childbirth appears to be founded upon the declaration of revelation that "in sorrow thou shalt bring forth children," and upon the erect posture of the body. True, parturition is frequently a tedious and painful process. That this is the rule among the higher classes of uncivilized countries is authentically substantiated by history. But that pain should be a necessary consequence of the erect posture of the body or that the Creator should have enjoined it as a curse upon the female sex—thus to afflict all women of all time regardlessly—appears so

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[1] An address delivered by invitation before the Faculty and Medical Class of the Kansas Medical College, at Topeka, Kansas, Saturday evening, October 20, 1894.

derogatory to the idea we cherish of his wisdom and goodness that it cannot be admitted. Were this true, it would follow that women of both civilized and uncivilized nations would be found suffering in like degree. However, when we consult the best practical writers, missionaries, and travellers, we learn that it is among the higher classes in the more civilized countries that women suffer the greater in both pregnancy and parturition, whereas the peasant and the savage women are comparatively exempt. To understand that the Creator did not intend to inflict bodily pain, we need but to interpret the punishment announced to the mother of the human race for her disobedience: "I will greatly multiply thy sorrow and thy conception; in sorrow thou shalt bring forth children; and thy desire shall be to thy husband, and he shall rule over thee."[1] It is evident that woman here is condemned to but two things: a state of sorrow and a state of subjection; but not to a state of suffering pain of body,—sorrow being a state of feeling pain of mind, as is manifested by grief, worriment, etc.

That woman may in sorrow bring forth children and yet not be subjected to bodily pain is rational, when we take into consideration that "the truest translation does not justify us in limiting the whole doom of the womanly distress and sorrow directly to the state of pregnancy and childbearing, for the womanly calling is an endless multiplicity of little troubles."[2] When we consider the possible dangers attending the puerperal state; the slow and difficult recovery of some, the death of others; when we recall the fact that less than half the number of children born attain the age of seven years; that not one-half of the remainder arrive at years of maturity; that even should the fruit of the womb be so fortunate as to escape death in its youth, yet shall it be exposed to dangers and temptations in the world, to which it may fall a prey, rendering life a burden to itself and a reproach to its parents. In other words, when she becomes conscious of all those undefinable impressions of grief and joy, to which the mind of the tender sex is at that stage so peculiarly susceptible, and all the common possibilities to which she may become liable while bringing forth children, including indispositions before, during, and after conception; and, after all, if the children prove idiotic or wicked, as in the case of Cain, Eve's first-born, they are more than ever the heaviness of her who bore them. Under circumstances like these—and what pregnant woman is not thus environed?—it may truly be said that in sorrow does she bring forth children.

That it is not "natural for women to have slow and painful labors" is clearly manifested by facts evidenced by the Scriptures and by all observers of extended experience. Thus, we find in the very early history of the human race that "the Hebrew women are not as the Egyptian women;

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[1] Genesis iii. 16.

[2] Professor Frank Delitzch, D.D., of Leipsic. Comments on Genesis iii. 16, in the Samaritan Pentateuch, which is a recension of the commonly-received Hebrew text of the Mosaic law, in use with the Samaritans, and written in the ancient Hebrew.

for they are lively, and are delivered ere the midwives come in unto them."[1] Also, during the birth of Moses, "the pangs of his mother's labour were alleviated, so as to enable her to evade the Egyptian midwives."[2] It is a noteworthy fact that the Hebrews were leading pastoral lives, while the Egyptians were beginning to live in comparative idleness and luxury. The former, being the more in accord with nature, were blessed with easy child-bearing, in exemplification of the fact that God uses natural means as the channel for his blessings. Thus, the Hebrews might have declared truly, "The labor we delight in physics pain."

Cazeaux says, "There are certain females who have the happy privilege of being delivered almost without any, or at least with very inconsiderable, pains. It is highly probable that the dilation of the neck goes on quietly in such cases, under the influence of contractions which are not perceptible to the patient, from being unattended with pain."[3]

Bruce, speaking of Abyssinia, says, "They do not confine themselves even a day after labour, but wash, and return to their work immediately."[4]

"A Morlac woman," writes Dobson, "neither changes her food nor interrupts her daily fatigue on account of pregnancy, and is frequently in the field or on the road by herself, takes the infant, washes it in the first water she finds, carries it home, and returns after to her usual labor, or to feed her flock."[5]

Hennepius observed that "the Spaniards in Brazil, who perform the office of midwife to their teeming consorts, receive the infant, tear the navel string, and wash and paint it. The lying-in woman does not meet with more indulgence than the infant; as soon as she is unburdened, she goes and washes herself, and immediately sets about her work without suffering any inconvenience from it."[6] He also observed that "the wives of the Livonian peasants use the same custom. The women retire to some private place when the time of delivery is at hand, and return immediately after to their work."

"The Moorish women," say Sagnier and Brisson, "have no midwives, but are usually alone at the moment of delivery, laid on the ground under an indifferent tent, the women departing even on the day of their delivery to encamp at the distance of fifteen or twenty leagues."[7]

Brydone says, "The labors of the Sicilian women are accompanied with so little pain and danger that they appear perfectly well the day after de-

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[1] Exodus i. 19.

[2] Josephus's Antiquities, Book II. p. 9, §§ 2–4. Stanley's History of the Jewish Church, p. 93.

[3] Cazeaux's Theoretical and Practical Midwifery, p. 288.

[4] Travels to Discover the Source of the Nile, vol. ii. p. 21.

[5] Dobson's Encyclopædia, article Morlacka.

[6] Ceremonies and Religious Customs of Various Nations, vol. iii. p. 20.

[7] Voyage to the Coast of Africa, p. 494.

livery. For in this happy climate childbearing is divested of all its terrors, and is only considered as a part of pleasure."[1]

Missionary travellers in the Sandwich Islands have observed that "the native women scarcely suffer any in childbirth; instead of remaining in bed, they get up immediately, bathe themselves in cold water, work, walk, exercise, and eat as usual."

The Indian women are and the negro slaves of our own country were also blessed with this happy privilege to a great degree; for, says Frank Wilkeson, "when taken in labor while marching, or on a hunt with their husbands, they will retire behind a bush, deliver themselves, and in an hour's time rejoin their companions."[2]

Dr. James L. Neave, government physician, in charge of some fourteen hundred Indians at Fort Berthold, North Dakota, writes, "Their women, as a rule, had very easy labors; in fact, it was no trouble at all for them to have children. At one time I saw several women coming towards the only store at the agency, across a wide, open space in front, each carrying on her back a bundle of sticks. Suddenly one stopped short, looked a little wild, dropped her bundle of sticks, spread her feet apart, strained a moment, and then stooping, made a pass towards the ground with her knife that she drew from its sheath, picked up something which she wrapped in her shawl, and, leaving her bundle of sticks for some one else to pick up, passed into the village. That was a confinement, and the child was born then and there."[3]

Barnes says, "Natural or easy labor, propitious both for mother and child, is a continuous process going steadily on towards the accomplishment of its object. By a well-known figure of speech, we use the word 'pains' to describe the 'expulsive forces,'—that is, we put the effect for the cause. It is too true that expulsive effort and pain commonly go together. In the most propitious labors, although the contractile power is active and vigorous, there may be little or no pain. It may even be stated as a general truth that the greater the pain the wider is the departure from propitious labor. Where pain predominates, more or less disturbance of the typical harmony between the factors of labor is certainly entailed. The nervous energy, instead of being concentrated upon the duty of supplying the uterus and auxiliary muscles with contractile power, is in great measure wasted in other directions. Two evil consequences result: first, the labor itself fails to proceed as it ought; secondly, the system at large is injuriously affected. It is in the observation of these two conditions that we find the proofs of dystocia."[4]

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[1] Tour through Sicily and Malta, vol. ii., letter 22.

[2] Frank Wilkeson, C.E., in the employ of the Northern Pacific Railway service about the year 1873, and now special correspondent for the New York Times, personally gives me this information as obtained from the Blackfeet, Sioux, Spokane, Walla Walla, and other Indian tribes.

[3] Experiences among Frontier Indians, by James L. Neave, Dresden, Ohio. Cincinnati Medical Journal, vol. ix., No. 6, June, 1894, p. 367.

[4] Dr. Robert Barnes's Lectures on Obstetric Operations, fourth edition, 1886, p. 3.

The observation of experienced obstetricians is fully summed up by Bland: "We know that many women are safely delivered of full-sized children so suddenly that they have scarce time to call for assistance; that sometimes, waking from their sleep with a slight pain, labor is hurried through in a few minutes, while the woman is almost unconscious of what has happened. Some women, again, have been taken in labor while walking, and have not even had time to be conveyed to any house or convenient place, but dropped their burdens where they happened to be first seized. Others, while on a visit, at dinner, or in the midst of some amusement, have been surprised by labor, and have parted with their children with little or no pain or trouble."[1] That eminent accoucheur and classical writer, Dr. Hodge, observed, "Frequently the whole first stage of labor is accomplished without pain, and with even trifling sensations; indeed, in the second stage—that of expulsion—the contractions may be very efficient and the suffering very moderate. Indeed, in one case a lady insisted she had no pain. The practitioner, therefore, cannot always trust to the sensations of his patient, either as to the occurrence or progress of labor, by the degree of pain existing, and he cannot always be satisfied that there is no labor because there is no pain; his investigation must be more minute and extensive."[2] These facts, contrasted with the most difficult childbirths, give us a true idea of *eutocia*—the normal way of childbearing—and the birth-sorrows as being distinct and separate factors from birth-pains that have prevailed in human history.

Thus, we find that pain does not occur in every case of parturition; therefore, the parturient process is not necessarily painful. Reasoning *a priori:* if all women are not necessarily and inevitably subjected to pain in parturition, then none are. This being so, it follows that pain in childbirth must depend upon adventitious causes. In proof of this declaration, history records the fact that the women who live and move in a natural sphere, whose physical development and life are the fulfilment of the natural law, are entirely free from pain in childbearing, the truth being that nature has formed such a structure of parts—in the primitive law of the erect human economy impressed upon it at its creation—as to counteract the effects of gravity, prevent miscarriage, and effect childbirth without difficulty and without suffering pain. But civilization has stepped in, and the means instituted have brought about those obstacles which impede delivery and constitute the cause of the excruciating pain which the unfortunate sufferer is compelled to endure. This testimony in favor of the ease and facility of normal childbearing authentically and indisputably establishes the fact that the parturient process should not necessarily be painful. Can it be possible that the Creator, who has established general laws for the government of the universe, with exact equivalence pervading

[1] Bland on Parturition, p. 24.

[2] Hodge's System of Obstetrics, p. 119.

all nature, would be partial in this particular? I answer, No! God's law declares here, as in all nature, "The way of the transgressor is hard."

The conclusion of the whole matter is simply this: that childbearing would occur at all times with ease and safety had not mankind, as they became civilized, introduced customs and modes of living so very different from those of their primitive ancestors, and so very inconsistent with the natural law. Thus, through unwholesome civilization—by ignorance as well as carelessness and viciousness—have come fixed habits of excess; and if excesses be indulged in, evil consequences will follow and must be endured; for nature's law would have to be changed before they could be prevented or banished by any method of treatment. It follows, then, as a natural consequence, that prevention of these pains will depend not so much on treatment by application or administration of remedies as on the successful education of these women, so that they will learn how to and will actually cultivate the requisite self-discipline to prevent the continuous irritations from excesses in their modes and habits of life.

"For 'tis a truth, well known to most,
That whatsoever thing is lost,
We seek it, ere it comes to light,
In every cranny but the right."

The suffering of pain in childbearing is an abnormal condition and the curse of unnatural civilization. A regimen which would produce a natural condition in pregnancy would with certainty do away with the birth-pains, in fulfilment of the promise that, "Notwithstanding she shall be saved in childbearing, if they continue in faith and charity and holiness with sobriety."[1] "Neither shall there be any more pain: for the former things are passed away."[2] Even the sorrows of pregnancy may be very materially mitigated by the law given us by Ramble: "*The safe and general antidote against sorrow is employment.*" Thus, we can say with the great English scientist, Professor Huxley, "We are, indeed, fully prepared to believe that the bearing of children may and ought to become as free from danger, long debility, and pain to the civilized as it is to the savage."

The progress of obstetrics in the immediate future must be made through the knowledge that will be wrought out by the devotees of biology. Thus, we shall find our way, on positive grounds, back through the morphology of organs, tissues, cells, and blood to a clear comprehension of the origin of vital activity in protoplasm and the pabulum which sustains it. This is the only way open for us into the primitive arcana of nature, if we would have the wisdom essential to inculcate intelligently that regimen which will successfully prevent the needless sufferings of pregnant and parturient women.

The future distinction of obstetric science can obtain only by an advanced

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[1] I. Timothy ii. 15. [2] Revelation xxi. 4.

study of human biology. When this truth is propounded, there opens before the thinking mind a vista so transcending all ordinary limitations of obstetrical knowledge, that such genius and such expansion of the mental eye as are required in order to embrace it in its simplicity scarce yet obtain. Surely, a measure of this transcendent importance, which promises to divest woman of pain during childbearing and to bring the rate of mortality to *nil*, deserves our earnest attention and support. To continue, as we have been much too long continuing, standing wakefully and helplessly with anxious pity by the side of the unfortunate and needless sufferer, until her agonies force her to cry out, "Good Lord, deliver me!" is a reproach to the obstetrics of the present era, and deserves mention only that it may be, with certainty, relegated to the past.

As well deny all mankind the beneficence of education and culture as to leave civilized woman consigned to her present state of infirmity without bringing her the aid of that enlightenment requisite to her physical betterment during pregnancy and parturition. It remains, then, for our guild to endeavor, by rigid scientific investigation through advanced biologic studies, to make patent the causes of the sufferings of pregnant and parturient women, and to determine exact measures for emasculating these causes, or for neutralizing their effects whenever they have eluded detection or escaped emasculation.

With the assumption of our responsibilities as obstetricians we are confronted with the fact that it remains our duty to become neophytes in learning, in teaching, and in practising the principles of biology on the lines and to the extent herein indicated. When this obtains, obstetrics will be so much further advanced and elevated to the distinction it justly deserves that we may well hail the hastening of the day when the world shall recognize obstetricians as taking first rank among the paramount benefactors of the human race, this chiefly by virtue of suppressing the causes of all preventable pain, and of banishing the suffering, shortening the duration, and lessening such dangers as cannot be prevented. With this high standard will come such insignia of real knowledge and such fruit of expert skill that childbearing may come to be to civilized woman what it has been in the primitive state of woman, and is intended by nature to be,—namely, a blessing free from pain.

This brings us to consider in what special physiological phenomena this civilization in disobedience to the natural law produces the pathological symptom of birth-pain. The seat or location of pain during the period of uterine contraction has been a subject of much discussion. Madame Boivin, who ought to be a correct judge, having suffered *in propria persona*, locates the pain about the neck of the womb, and declares the dilatation of the same almost the only source of pain. Madame Lachapelle writes, "These lumbar pains may generally be referred to too great rigidity of the external orifice, either because this experiences a kind of cramp, or that, owing to its unyielding condition, it receives the full force of the uterine

efforts, and consequently suffers more than when softened." M. Bean observes, after recognizing rigidity of the soft parts to be the first cause of the pain, that "the suffering which it produces is not seated in the uterus, but in the lumbo-abdominal nerves, thus constituting, for the most part, a lumbo-abdominal neuralgia, precisely as though the case were one of pathological disease of the uterus." Cazeaux probably sums up the most acceptable explanation: "The pain which accompanies the uterine contractions is not a unique factor in the organism, inasmuch as all rather severe involuntary contractions, in whatever organ they may take place, are attended with pain. I would mention, in illustration, cramps in the muscles of animal life, colic pains in the bowels, spasmodic contractions of the bladder, and palpitations of the heart. Under ordinary circumstances it is true that the muscles of the limbs, of the intestinal canal, of the bladder, and of the heart are constantly contracting without pain, but the moment they become affected with severe involuntary contractions pain is experienced. This would seem to be a law of pathological physiology which is as applicable to the uterus as to any of the organs. We believe, therefore, that the pains of labor have their seat in the uterine walls, precisely as colic pains are situated in the walls of the intestines. The painlessness of the contractions which take place during pregnancy is explained by their feebleness, and are comparable to the peristaltic motion of the bowels, of which we are unconscious. The lumbar pains doubtless depend on the sensibility of the orifice, and this can readily be explained by the origin of the nerves distributed to the neck, for the hypogastric and lumbar plexuses furnish them, whilst the ovarian plexus of the splanchnic nerve alone sends its branches to the fundus uteri."[1]

All the soft parts concerned in labor,—the neck of the womb, the vagina, the perineum, and the adjacent soft parts,—in a natural condition, are prepared and disposed to dilate. Thus they offer little resistance to the expulsion of the child, which is effected with very slight exertion and without pain. But from such unnatural customs, habits, and modes of living as are not consistent with the primitive healthful condition of woman, these parts acquire so firm and rigid a state that it takes considerable force, at times, to dilate them. Indeed, so firm has this rigid condition been found that the strongest and most violent contractions of the uterus were unable to overcome it. This firm and rigid condition of these soft parts has been universally noticed by writers on the obstetric art as a cause of dystocia. The author has frequently known delivery delayed for hours, and even days in some instances, from this cause alone, when every other circumstance was in favor of a safe and speedy termination of the patient's suffering and danger. For the purpose of dilating the soft parts and expelling its contents, the uterus is possessed of a strong power of contraction, by which means the liquor amnii and the fœtus are pressed against the neck,

[1] Cazeaux's Midwifery, p. 291.

which is thus gradually dilated. This action of the uterus we shall consider as threefold,—

First. The periodic contraction. This it owes to muscular structure; it is temporary and cannot be continued long at a time.

Second. The permanent contraction. By this it adapts itself, like all other hollow viscera, to its contents, as the blood-vessels to the blood and the bladder to the urine.

Third. The irregular, spasmodic, or convulsive contraction. This is due, like all other disordered muscular action, to a morbid irritability or irritation of the uterus.

The two first-named contractions may be considered as the natural and healthy action of the uterus; since, in a normal state, the first accomplishes the dilatation of the soft parts, while the contents of the uterus are expelled by the second. The third is a disordered action and constitutes a morbid condition; it is never of any service in dilating the soft parts or in the expulsion of the uterine contents, but is generally attended with the most excruciating pain. This morbid irritability, or irritation, of the uterus may result from such causes as inflammation of the cervix, occasioned by the violent pressure of the child's head, or from constipation, syphilis, gonorrhœa, rheumatism, coitus during gestation, etc., or from a congested condition of the soft parts, owing to plethora, superinduced by the indulgence of the appetite, improper dress, deficient recreation through improperly regulated exercise and sleep during gestation. All of which causes are productive factors in establishing that abnormally firm and rigid state of the soft parts which is here held as the consummate cause of birth-pains. From great rigidity of the soft parts and morbidly violent contractions of the uterus, there have occurred (*a*) rupture of the uterus; (*b*) laceration of the cervix, perineum, and sphincter ani; (*c*) protrusion of the cervix before the head of the child, which in some cases had to be divided before delivery could be effected; (*d*) inflammation and gangrene of the soft parts, which in some cases proved fatal, while in others, though the patient survived, she was subjected to involuntary discharge of fæces or urine through the vagina; (*e*) an atony of the uterus succeeding; and even though the rigid soft parts eventually became relaxed, the uterine contractions proved insufficient to expel the child; although the delivery was accomplished with forceps, yet the injury did not end here, a hemorrhage supervened which proved fatal to the patient. Now, when we add to these the risk of convulsions or of rupture of the blood-vessels, all of which have happened and may again happen under similar circumstances, we cannot rationally conclude that any advantage can be derived from "waiting patiently for the efforts of nature," as did our fathers. This testimony offers irrefutable evidence that the principal causes of pain in parturition are,—

First. The resistance to the expulsion of the child from rigidity of the cervix, perineum, and the adjacent soft parts.

Second. The morbid, irregular, spasmodic, or convulsive contraction of the uterus.

Thus, then, we find that the indications for preventing or banishing these pains are twofold,—

First. To restore the cervix, perineum, and adjacent soft parts to their primitive normal disposition to dilate.

Second. To restore the uterus to its primitive normal contraction.

Having pointed out the ill consequences arising from a rigid state of the soft parts and from morbidly violent contractions of the uterus, together with their causes, and the indications for preventing or banishing the same, we proceed to the consideration of the means by which these evils may be overcome. We shall notice, first, the means that are requisite during gestation to avoid morbid irritability or irritation of the uterus, as well as to enable the soft parts to retain their normal disposition to dilate; and, second, the means that are requisite during parturition to effect a dilatation of the soft parts and to restore the uterus to its normal contraction. The means requisite during gestation may be summed up by,—

(*a*) A low nourishing and laxative diet.

(*b*) Recreation by properly regulated exercise and rest.

(*c*) Laxative and depurative remedies.

The appetite during pregnancy is frequently increased, and much mischief has resulted from an inordinate indulgence of this morbid craving. It will be necessary not only to limit the quantity of the food, but also to attend to its quality. A too liberal allowance of animal food or condiments (especially fats and sweets, which, being largely carbonaceous, cause increased febrile conditions), all substances of a stimulating or irritating nature, and all alcoholic beverages should be strenuously avoided. There should be a withdrawal of carbohydrates and fats, and substitution of such wholesome and nutritious food as digests easiest, furnishes the most life, and will replace every normal tissue in the body, as proved by trial. The bill of fare is probably best made by a selection from fresh animal foods (lean meat only), fresh fruits and vegetables, pure milk, and distilled water. True, no general rule can be made to suit individual cases, but probably the best diet that can be selected for the majority of pregnant women is one composed principally of the aforesaid articles.

As to recreation, it is a fact, confirmed by all writers and experienced observers, that those women who take the most exercise and sleep endure gestation and childbearing with greatest ease and safety. Hence we account for the more easy deliveries of the women in childbirth in the country than of those in the cities, and of the laboring classes than of those in the higher states of society. To the combined good effects of low nourishing and laxative diet and recreation by abundant exercise and sleep may be attributed the painless and safe parturition among the uncivilized and savage women throughout the world. The reason of this is to be found in the fact that these women suffer little, if any, from the morbidly congestive

state of the system so common among civilized women, who indulge their appetites and adopt irregular and inactive modes of life. That this morbidly congestive condition in civilized women is the main cause of their painful suffering during gestation and parturition is further evidenced by the fact that prolonged suffering of pain, likewise, almost invariably accompanies a premature delivery, even where there is little osseous development in the fœtus. It will be observed that I say morbidly congested state. This is in contradistinction to the recognized fact that there is in all women a normal disposition to plethora during gestation. This is found to be the case, not only from the limited sphere of individual practice, but from the general history of pregnant women in all countries and in all stages of society. Woman's whole system during gestation—vascular as well as nervous—is found normally excited in sympathy with the vital activity of the uterus, produced and kept up by the existence of a living being within its cavity. Therefore, when pregnant and in her natural state, a woman feels well, is active, and able to enjoy society and to attend to her ordinary avocations. Thus we find this to be the case, as above noted, among the savages and the peasantry of foreign lands, and the Indians and the former slaves of our own country. While, on the other hand, the superior education, the intelligence, and the marked civilization with disobedience to natural law of the enlightened and more favored daughters of the earth are accompanied by an exaggerated development of the emotional nature and a corresponding deterioration of the physical powers, whereby the physiological functions are interfered with, and a pathological phenomenon manifests itself. This doctrine of vascular excitement and plethora which characterize the pregnant state is still further confirmed by the irrefutable evidence of the occasional occurrence of hemorrhages from various tissues during pregnancy. Thus, we meet with bleeding from the nose, lungs, bowels, stomach, etc., during gestation, which does not aggravate the sensations of weakness or oppression, but, on the contrary, relieves the suffering congested organs and the whole distended system; the chief cause of these pathological conditions being the carbohydrate and fat foods in excess, and their prolonged fermentation in the alimentary canal.

Laxative and depurative remedies are essential only in such individual cases where a regulation of diet and recreation fail to overcome a constipated, congested, or phlogotic condition. By their evacuating effects they relieve local congestion and general plethora, thereby possessing, in such cases, a material efficacy in disposing the soft parts to dilate. The laxatives which have produced the most efficient and satisfactory results in the writer's experience are—

℞ Confectionis sennæ, gr. x–xx;
Ext. cascaræ sagradæ, gr. i–ii.—M.
Sig.—One dose to be taken at bedtime.

Alternating every other evening with—

℞ Olei ricini, ʒii;
Olei caryophylli,
Olei gaultheriæ,
Olei menthæ piperitæ, āā gtt. iii;
Spiritus cinnamomi, ʒiss;
Glycerini, ad ʒiv.—M.

Sig.—One to two tablespoonfuls every other evening at bedtime.

Or with—

℞ Pulvis glycyrrhizæ compositi, ʒi–ii;
Resinæ podophylli, gr. ⅛ to ¼.—M.

Sig.—One dose to be taken at bedtime.

As depuratives we obtain the best results from the use of hot water internally, per orem and per rectum, together with the acetate, citrate, or bitartrate of potassium, the latter preferably given in the form of "cream-of-tartar lemonade" as an agreeable diuretic. Vapor baths and massage or Turkish baths have been found very beneficial among town-dwellers who had become stout and flabby, easily tired, and suffered from lack of energy and from mental depression. Aperient and purgative mineral waters have been found very useful in many cases where a prejudice existed against laxative and depurative medicine, but none against the same agents in a natural water. It is to be remembered that it invariably is found to be the case that an undue value is placed by the laity and the interested proprietors of the medicinal value of mineral waters. In proof of the fact that the benefit derived is in most instances due to change of climate and scenery, freedom from home cares and business worry, regularity of life and diet, drinking of water in larger quantity, and in very many cases the substitution of water for alcoholic beverages, it is but necessary to cite the further fact that invalids whose homes are in the vicinity of some wonder-working spring or springs will not usually derive any benefit from that water, but will be totally relieved by the water of other springs similar in constituents when located several hundred or thousand miles away; the truth being that in order to get the worth of their money people will gladly submit to hygienic and dietetic restrictions at a watering-place or fashionable spring which they would totally ignore at home. Therefore, it becomes frequently an essential requisite for us to advise our clientele, by giving cognizance to the fact that "distance lends enchantment," and the resort regarding which the patient entertains the most favorable preconceived idea, all things being equal, to make haste to one of these reputed springs, that the desired good result may obtain. We thus act by *natural suggestion*, thereby increasing the confidence of our patients and at the same time securing the aid of the natural resources in effectually bringing about a normal condition.

The following remarkable case came to my personal notice. This case is especially interesting from the fact of giving unquestionable evidence that exercise and scanty diet are capable of preventing the sufferings of parturition:

M. H., aged twenty-two, a farmer's daughter, who was obliged to labor with her father in tilling the soil and other farm duties like a man, consequently worked hard and fared scantily, was denied by the parents the privilege of society and education, as was also her brother, from whom she conceived (a pitiful circumstance to relate). She followed all her usual labors, as above stated, during the entire period of gestation, without any suffering or inconvenience, and one morning in June, 1870, while on duty driving her father's cattle into the pasture, after letting them into the field and just in the act of closing the bars (about one-half mile away from the house and all by herself), she was surprised by a gush of water from the vagina and a sensation of something coming from her; she got down on her knees, but before she could raise her clothes to see what it was, the child had dropped to the ground, placenta and all. She tore the navel-string, threw away the after-birth, and carried the child home in her apron, much to the surprise of all in the house, as both she and her parents insisted absolutely that neither was aware of her pregnancy. I saw this pitiful young mother afterwards, and she repeatedly declared that she absolutely had no pain whatever, using her own words: "No more feeling than when my bowels move." Her mother corroborated her statement, that she was not a day confined to bed, but following somewhat minor duties than usual for a few weeks, when she again assumed her position on the farm, feeling well and nursing her own babe, which was a fully-developed child when born.

My friend Dr. W. J. Hoffman[1] writes me,—

"I am constrained, from what I learned at various times during my career while in the service as medical officer in the army, at frontier posts, to the impression that squaws are not afflicted with anything like the same proportion of labor-pains to which Caucasians are liable. I had, however, two cases—white women—while in practice in Pennsylvania, in which childbirth occurred during the mothers' sleep, and they were not aware of the occurrence until the infant's movements aroused them. I can scarce give you details, as the occurrence dates back to 1866, and my books are in Reading, Pa."

Dr. Ephraim Cutter, of New York City, writes me as follows:

"I think labor can be physiologically shorn of most of its pains, as the following cases tend to show.

"Case I.—Mrs. B., now living in Brooklyn, New York, had four children with difficult labors. At the fourth labor the four attending physicians, after a severe time of it with forceps for them and her, told her that she could not have another child, as it would be fatal to her. After this she went on to diet advocated for chronic rheumatism, which was distorting her joints and threatening to render her helpless. After recovery she became pregnant, and, continuing said diet, was delivered at term of a fine child half an hour before the attending obstetrician arrived. She said that it was born with one slight pain. As she is a lady of refinement and good character, whose word would be taken anywhere, and she being the only party to feel the pain, it is unwise to refuse to believe her testimony. One slight pain and instant delivery, as compared with pains for days and difficult instrumental delivery, threatening death, is certainly a testimony towards painless labor.

"Case II.—A virgin, twenty-four years old, married a widower. Her physician found hyperæsthesia of the vagina and uterus, and complete anteversion; os uteri

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[1] Dr. W. J. Hoffman, ethnologist, Bureau of American Ethnology, Smithsonian Institution, Washington, District of Columbia, and formerly medical officer in the army at frontier posts. Indians were numbered by the thousand.

narrowed by a swollen cervix roughened with small granulations. The family attendant said to consultant, 'Doctor, you don't expect to cure that woman, do you? You can't. She is incurable. I will not take any responsibility in the case.' After timely preparatory treatment she wore my stem pessary for nine months. On its removal she became pregnant, and, being placed under special regimen, the family physician reported the subsequent labor as the most normal one he ever knew. She had an abundance of milk, and the babe was a joy and beauty to all observers."

In response to a letter to the aforesaid Dr. Neave soliciting additional facts from his experience in this connection, I received the following:

"DRESDEN, OHIO, June 21, 1894.

"MY DEAR DR. DEWEES,—I lived among the Indians from July, 1878, to October, 1885. Thus seven years of my professional life were spent on the frontier as government physician in charge of some fourteen hundred Indians. My post was Fort Berthold, North Dakota, and the Indians under my care were the Arickarees, Gros Ventres, and Mandans. Judging from such observation as I was thus able to command, which was ample, as childbirth among the Indians is simply an ordinary, every-day occurrence, I am convinced that there was no pain to speak of. If they suffered pain during confinement I never knew it. Neither did I see that the pregnant women changed customs or habits. I saw them at all times during pregnancy, and they worked right along as usual. They worked in the fields just before and just after confinement. Indeed, I never missed them, and I was in their village every day for seven years. I never heard of any difficulty from malpresentation. I would certainly have been called to render assistance had there been need of any from this difficulty. I never saw a squaw that had any appearance of having, nor to suffer in childbirth from, a deformed pelvis, and never knew of one to die during childbirth. To sum up, childbearing among the Indians is a perfectly natural process, almost painless, so far as my observation goes, and the squaw is as unconcerned about it as she is about an action of the bowels, and the one is about as dangerous and as painful as the other with her.

"Among the white race I had one case of absolutely painless labor. The mother was of rather slight build, and the child weighed seven pounds.

"Yours truly,

"JAS. L. NEAVE, M.D."

As practitioners we are too seldom consulted respecting the regimen to be observed during the period of gestation, being frequently not called until the moment our assistance becomes necessary; therefore we are precluded from advising as to the means essential for preventing birth-pains. Consequently we meet with these causes and conditions, and must attempt their removal and correction at the commencement of or during the parturient process.

It is but proper in this connection to record the fact that the honor of first calling attention to the possibility of lessening the sufferings of parturition belongs to the father of American medicine, Dr. Benjamin Rush, in a letter to Dr. Miller, written at the beginning of the present century, in which he speaks of this effect of bloodletting, reference to which is found in the *Medical Repository*, vol. vi. page 26.

This brings us to the consideration of the means referred to under our second general head,—namely, the means which are requisite during partu-

rition to effect a dilatation of the soft parts and restore the uterus to its normal contraction. With reference to these, we can speak commendably only of the following:

First. Hot water.

Second. Morphine and atropine.

Third. Chloroform.

Fourth. Bloodletting.

Being called to a woman in parturition, and finding her in the first stage, I invariably endeavor to ascertain as early as possible whether there is any disposition in the soft parts to dilate, and whether it be complicated with any mechanical obstruction, such as indurations, scirrhus, contractions, adhesions, tumors, malformations, malpresentations, etc. The case proving to be one within the scope of this paper, and bearing in mind the aforesaid indications for the relaxation of the soft parts and restoration of the normal uterine contraction, the management of it becomes very clear,—namely, to remove all exciting and aggravating causes and to diminish, by direct or indirect measures, the vascular and nervous excitement, both general and local, and to restore the uterine forces so as to operate properly. With my mind thus refreshed, I keep the lying-in chamber quiet, cool, and well ventilated, allow the patient none but semi-solid and liquid, easily digested food, limit the company to the fewest number consistent with requirements, confine conversation to suitable and agreeable topics, quieting the patient's anxieties by presenting the most favorable prospects in accordance with the truth and duty, and constantly direct every detail tending to increase her physical comfort. Ordinarily, I first order a rectal enema of hot water,—about 120° F.,—ranging in quantity from one to three pints, administered during the interval of uterine contractions, with the patient lying in the left lateral semi-prone position, the water to be evacuated only when it can no longer be retained. This may be repeated several times, *pro re nata.* During the uterine contractions, clean cloths wrung out in water as hot as the patient can bear comfortably—from 120° to 130° F.—are applied to the perineum. Water used hot as here indicated has proved of great value in my hands; its therapeutic usefulness in cases of vital rigidity was chiefly manifested as follows: by giving great comfort to the patient in producing a general warmth and quietude, in allaying both vascular and nervous excitement, by promoting uterine contractions, by inducing rapid relaxation of the cervix, vagina, perineum, and vulva, and by banishing the suffering of pain and shortening parturition very materially in many instances. When there is much suffering from painful uterine contractions, especially in the first stage, I also administer, hypodermically, morphine with atropine, in the proportion of one-fourth grain of the former with one-fiftieth grain of the latter; this combination acts much more satisfactorily than either atropine alone internally or the extract of belladonna applied locally to the rigid and unyielding cervix. The minority of cases of this class will, however, not yield to such treatment. Hence, we have to resort

to other means, following this step in our endeavor to aid the physiological process to a safe termination.

This brings us now to notice carefully the two distinct general classes into which these cases are naturally divided, in order that we may the more intelligently comprehend the indications for the management of each class respectively, lest we should find ourselves guilty of error, with serious consequences to mother or child, or both, as well as to our own reputation. These two general classes are,—

First. Those who are mainly of a *lymphatic temperament*, of lax fibre, or possessed of but little muscular power, and who are generally nervous and irritable, whose suffering depends chiefly upon *muscular excitement.*

Second. Those who are mainly of a *sanguine temperament*, of firm fibre, or possess much muscular power, and who are generally composed but irritable, whose suffering depends chiefly upon *vascular excitement.*

The two remedies paramount here are chloroform and bloodletting; chloroform being the sheet-anchor in the first, while venesection is equally so in the second of these two general classes. Were these two grand distinctions more generally recognized, and these rational means properly employed, we should learn much less frequently of the painfulness and serious results occurring from rigidity than the present statistics are forced to show. This is, however, not a new, though it be a much-neglected, doctrine, for we learn that as early as 1860 Hodge wrote: "The testimony of practitioners seems to prove very positively that all the rigidity which depends on *muscular excitement*, often so great as to cause spasms, will be relieved by anæsthesia; the tension disappears and the tissues become relaxed; but where the rigidity depends more upon *vascular excitement* or upon any physical condition of the parts, there is comparatively little or no relaxation."[1] Experience has taught us, however, that the distinction drawn by Hodge, though proper, is too meagre in detail to serve as a reliable safeguard to all, when occasion demands discrimination at the bedside. Therefore, I beg leave to submit the following differentiation as to the employment of these means, as well as the similarity in the result obtained:

CHLOROFORM.	BLOODLETTING.
1. Chloroform is indicated, and should be employed, only in cases of the first class.	1. Bloodletting (venesection) is indicated, and should be employed, only in cases of the second class.
2. To be effectual, must be administered moderately, and only during the period of uterine contraction; but at no time to *total* unconsciousness and insensibility, or to complete anæsthesia.	2. To be effectual must be copious.
We have not observed in any instance that any great effect was produced upon the rigid tissues by this agent, unless continued to semi-anæsthesia, when it often	We have not observed in any instance that a less quantity than twenty ounces has produced any great effect upon the rigid tissues at the pelvic outlet; but in those cases where from twenty to forty ounces were taken it frequently acted like a charm in producing rapid dilatation of the parts. Hence, we have often

[1] Hodge's System of Obstetrics, p. 427.

CHLOROFORM.

acted effectually in producing dilatation of the parts as well as in stimulating the uterine contractions to healthy activity, whenever previously weakened by prolonged efforts; but that whenever it was pushed to complete anæsthesia the uterine contractions were arrested. It is preferably administered by placing one-half to one teaspoonful of chloroform upon a little absorbent cotton at the bottom of a goblet and requesting the parturient woman to hold the goblet in her own hand, raising it to her nostrils at the "on-coming of each pain," and to freely inhale therefrom. The moment the much-desired stage of semi-anæsthesia is reached, the hand with goblet will drop, and thus we have a safety-valve against complete anæsthesia.

3. Thus employed, at the time of parturition, is a safe, easy, and effectual means of lessening the suffering; relaxing the rigidity of the perineum and adjacent soft parts, and less often shortening labor.

4. It may be objected to this practice that chloroform anæsthesia would occasion cerebral anæmia, whereby the uterus might lose its power of contraction, and consequently there would be an inability to expel the fœtus. Such an accident we believe could not occur, unless considerably more chloroform than necessary were administered, since we have the following two laws as well-established factors in science:

First. That chloroform may be administered periodically in small quantity (from one-half to one drachm) to the parturient woman, without injury to the mother or child, but administering it continuously or to complete anæsthesia is always fraught with great danger.

Second. That it is not necessary to administer the anæsthetic continuously or to complete anæsthesia in order to effect a relaxation of the parts, or to restore the uterus to its normal action.

BLOODLETTING.

repeated the operation, with the most happy results, when no effect was manifested from the first bleeding. The uterine contractions, when weakened from prolonged efforts in these cases, have invariably been stimulated to healthy activity following this procedure.

Women who are stout, robust, excessively plethoric, and good feeders will be benefited by taking from fifty to sixty ounces of blood, with perfect safety and the greatest relief. By bloodletting short of syncope, and chloroformation short of surgical anæsthesia, we obtain similar results in this, that *both allay sensibility but not irritability.*

3. Thus employed at the time of parturition, is a safe, easy, and effectual means of lessening the suffering; relaxing the rigidity of the perineum and adjacent soft parts; and often shortening labor very materially.

4. It may be objected to this practice that copious bloodletting would occasion syncope, whereby the uterus might lose its power of contraction and consequently there would be an inability to expel the fœtus. Such an accident we believe could not occur unless considerably more blood than necessary were taken, since we have the following two laws as well-established factors in science:

First. That a large quantity (twenty to forty, and even sixty ounces) of blood may be drawn from the arm of the parturient woman without injury to the mother or child.

Second. That it is not necessary to bleed until fainting is induced in order to effect a relaxation of the parts or to restore the uterus to its normal action.

To recapitulate: the triad to banish birth-pain would be mainly as follows: During the first stage, hot water, morphine, and atropine; during the

second stage, hot water and chloroform, or bloodletting; during the third stage, good nursing.

Contemplating this subject, I have endeavored to seek in nature the phenomena of the true doctrine of birth-pain. I have also essayed to present the best known means to prevent or to banish the same. In commending hot water, morphine, and atropine, chloroform and bloodletting as the best means known to science for banishing the pain during parturition, I do so informedly, after being repeatedly disappointed with such highly lauded means as nauseating doses of emetics, belladonna or cocaine locally to the cervix, chloral per rectum, etc., while ether has proved too irritating and too slow in its action, as well as too inflammable, with no smaller mortality than chloroform.

Let me assure you that I entertain no particular attachment or prejudice to any opinion of the authorities respecting birth-pain. This circumstance gained me the advantage of an unbiased and impartial examination of facts, from which I drew my conclusions, as herein presented, with a deference to reason. Thus, for almost two decades, my earnest practical attention has been devoted to this subject, at every opportunity presenting. Finally, to observe the distress of a fellow-creature, from whatever source it may arise, brings to the mind of sensibility extreme sympathy. But there is no situation which excites greater solicitude or in which our feelings are more interested than that which we are now considering. The parturient woman has, therefore, the strongest claim, not only upon our sympathy, but also to any exertion that can possibly be made to mitigate, to prevent, or to banish her birth-pains. Certainly, then, we ought not to be inactive spectators when we have it in our power to give certain relief, by making use of such means as will not only prevent or banish these pains, but will also prevent subsequent danger. It remains our most sacred duty to endeavor, to our utmost, to prevent, as well as to banish, these pains, notwithstanding the preponderance of opinion against it. True, not every case can thus be managed in practice, chiefly because its incipiency does not come under our observation. However, the consciousness is still ours that we can give the patient the best treatment, with a maximum possibility and probability of a painless, speedy, and favorable termination, and with a minimum risk from the means employed. Thus let us ceaselessly sound the tocsin until every member of our noble profession is awakened out of their slumbering inherent conservatism—that euphemism for stupidity—and becomes convinced of the truth as herein foreshadowed, upon the same solid basis here as will bring conviction elsewhere, by line upon line, precept upon precept, and fact upon fact, that the desired end may obtain. Let us ever be mindful that the way to the ideal is through enlightenment. When ignorance awakens to new-found knowledge,—the truth,—and not till then, will the ideal pregnant and parturient state be here a permanent blessing to woman. Let us continue to labor for the enlightenment that will abolish this great evil—birth-pain—what all complain of, but do not try to prevent or to

banish. Let us find continual profit, inspiration, and confidence, in our philanthropic endeavors in these truthful words: "All the great facts and principles by virtue of which we exist and act have, in times past, met with ridicule, denial, and scorn. We sneer at the ignorance of those who disputed the truth we now accept; yet we unconsciously follow their example, meeting each advance of science with opposition and scepticism, as if all truth had been discovered and there was nothing for us to learn; heedless of the fact that the heresy of yesterday has become the belief of to-day, and that what we now deny may become a part of our creed in the future."

Conscious of the imperfect manner in which I have treated this truly important and interesting subject, yet I trust that the seed thus sown in the minds of you who compose this medical class will bring forth such fruit, through your labors in practice in the future, as may give evidence of my not having detained you here this evening in vain. If time, that wonderful crucible of all things, shall eventually show that I have thus contributed to advance the interests of medicine by revealing additional light to nature's truths and furnished any principles to aid the labors of practice, to prevent or banish birth-pain, and to arrest for a moment the dreadful arm of death, I shall be more than compensated for performing my duty and paying this tribute to humanity. In conclusion, we must do this subject justice, in the words of Pope:

"If vain our toil,
We ought to blame the culture, not the soil."

THE EFFECTS OF VARIOUS METALS ON THE GROWTH OF CERTAIN BACTERIA.[1]

BY MEADE BOLTON, M.D.,
Associate in Bacteriology, Johns Hopkins University.

NÄGELI[2] found that certain metals, even in minute traces, inhibit the growth of certain diatoms. Copper he found to be specially active. Pure gold he found to be inactive; but gold coins placed in water of a neutral reaction inhibited the growth of the diatoms. Certain bodies, such as sulphur, carbon, and the like, were found to deprive the metals of their inhibitory power: if these substances were placed along with the metals in the water containing the diatoms, the latter were unaffected by the metals.

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[1] Work from the Pathological Laboratory, Johns Hopkins University. Read before the Association of American Physicians, May 30, 1894.

[2] Nägeli, C. von, Ueber oligodynamische Erscheinungen in lebenden Zellen. Denkschrift d. schweiz. naturforsch. Gesell., 1893, Zürich, Bd. xxxiii. 1. See also review in Botan. Centralbl., Bd. lv. 93.

Miller,[1] of Berlin, tested the effect of various metals used in dentistry upon the growth of bacteria. Miller's method consists in inoculating a tube of melted jelly with a large number of organisms and pouring the contents of the tube out on a sterilized glass plate. Bits of the metal to be tested are laid on the jelly while this is still soft. Where the metals have an inhibitory effect upon the growth of the micro-organisms there is a clear zone left around the metal after the colonies grow out on the other parts of the plate.

The various commercial preparations of gold tested in this way gave the following results:

1. Velvet gold has no antiseptic properties.
2. Wolrab's cylinders have very little.
3. Pack's pellets inhibited the growth for about five millimetres all round.
4. Quarter century gold foil and Abbey's non-cohesive foil about the same as Pack's pellets.
5. Rolled gold and sponge gold had no effect.
6. Tin gold had much less effect than gold alone.
7. Tin and platinum had no effect.
8. All gold loses its antiseptic power on being glowed.

Behring[2] tested in the same manner the action of several metals upon the growth of the anthrax bacillus, diphtheria bacillus, bacillus pyocyaneus, cholera bacillus, glanders bacillus, and typhoid bacillus, with the following results:

Abbey's cylinders (gold) gave a clear zone of inhibition with anthrax bacilli (1.5 centimetres), with diphtheria bacilli (three to five centimetres), with cholera bacilli (0.4 centimetre), with bacillus pyocyaneus (one centimetre); but had no effect upon typhoid bacilli or glanders bacilli.

Silver leaf and metallic mercury, and to a small extent copper, nickel, and zinc gave inhibitory zones. Tin, lead, and iron were negative.

Behring also tested certain insoluble salts of mercury, zinc, and lead. Calomel gave about the same results as metallic mercury, the oxide of mercury being somewhat more active. Cinnabar was entirely indifferent. Mercury and its compounds had just the same effect on all the organisms examined. Gold, silver, and copper coins, and to a limited extent nickel coin, had some effect. Gold coin had no effect on the typhoid or on glanders bacilli. The clear zones tested by inoculation into bouillon showed the micro-organisms to be absent. Behring removed the metal and re-inoculated the clear zones. In these re-inoculations the growth was much retarded, showing that some of the metal must have been in solution in the medium. Behring observed a peculiar discoloration of the silver and lead

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[1] Miller, Demonstration einer Methode zur Bestimm. d. antisep. Eigenschaften v. Zahnfüllungsmitteln, Verhand. d. deutsch. odontolog. Gesell., 1889, Bd. i., 1, p. 34.

[2] Zeitschr. f. Hyg., etc., 1890, Bd. ix. p. 482.

with the typhoid and cholera bacilli, whereas with the anthrax bacilli and the Finkler-Prior's and Deneke's spirilla there was no discoloration. Gold acts more powerfully upon the anthrax and pyocyaneus bacilli than silver does. Behring draws the conclusion that the metals are dissolved by the products of some of the bacteria more readily than by the products of others.

Uffelmann[1] tested the effect of metals on cholera bacilli by smearing the surface of coins with liquefied jelly cultures of cholera bacilli. The bacilli were dead in seventeen minutes after they were smeared on a copper coin. Cholera bacilli in a cholera stool smeared on silver coins in the same way were dead in twenty-five minutes after they were put on. On a brass coin the cholera bacilli, in a liquefied culture, were alive after thirty hours, but dead after sixty hours. On platinum foil there were living cholera bacilli after one hour, but not after five hours.

In the experiments given below I have made use of Miller's method already described. For the most part agar plates were used, and the metals were put on as soon as the plates were made. In some cases the metals were absolutely pure, in some cases they were commercial, but marked chemically pure, in one set brass foil was used, and a few preliminary experiments were made with impure metals. I am indebted to Professor Morse, of the chemical laboratory of the Johns Hopkins University, for absolutely pure zinc and cadmium. Professor Chittenden, of Yale, kindly sent a sample of pure silicon. The copper, silver, and gold I purified myself, with valuable aid from Dr. G. de Chalmot and Dr. H. M. Parks, both skilful chemists, formerly connected with the chemical laboratory of Johns Hopkins University. The foils mentioned in the description of the experiments were kindly furnished me by Professor Halsted, who used them in his experiments on the dressing of wounds. For the other metals besides those referred to I am indebted to Dr. Berkely, Pathological Laboratory, Johns Hopkins University.

There was no special selection of cultures. These were taken of various ages, and were usually oblique agar cultures. In order to get the reactions described below it is necessary to inoculate the melted medium with a very large amount of the culture, four or five loops to a tube; where smaller amounts were used it was often impossible to make out anything but a clear zone, and the peculiar figures described below were not obtained. If the layer of the medium is too thick the reaction is also interfered with.

Experiments with Copper.—A few preliminary tests were made with various micro-organisms, with ordinary copper wire, and with copper coins. The wire and coins were merely polished with ammonia and sand and then rinsed with water. The rest of the experiments were made with pure copper and with copper foil.

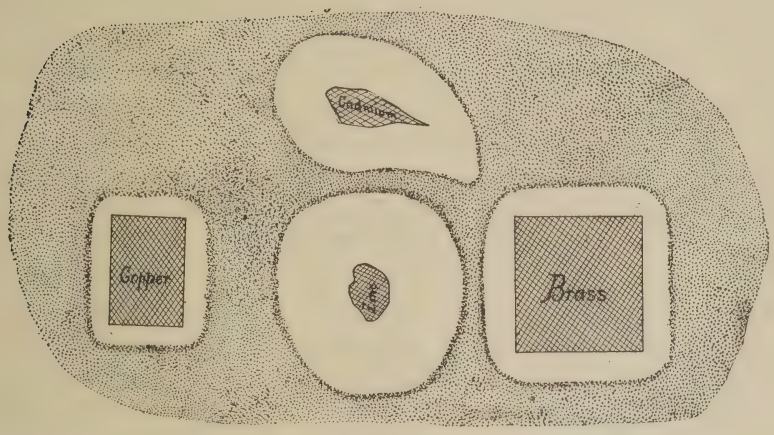
There is no marked difference in the behavior of the micro-organisms

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[1] Uffelmann, Beiträge zur Biologie des Cholerabacillus. Berlin. klin. Wochenschr., 1892, No. 48, p. 1212.

towards the copper in these different forms. In all cases there is a clear zone, in some cases narrower, in others wider, and then a narrow zone where there is increased growth. This intensified zone does not have as sharply marked borders as with certain other metals. Both the clear zone and the intensified zone vary appreciably in width, even with the same micro-organism. With staphylococcus pyogenes aureus (Fig. 1) the clear

Fig. 1.



Action of cadmium, copper, zinc, and brass on the staphylococcus pyogenes aureus.

zone measures in some cases as much as five millimetres in width, and in some cases only two millimetres. The average width of the clear zones in fifteen of the experiments with copper foil is 3.1 millimetres. With the micro-organisms of anthrax, cholera, typhoid, and the colon bacillus the clear zone varies from one millimetre to five millimetres in width with the same organisms at different times. In nearly all cases the medium around the copper becomes greenish and the foil becomes dissolved away, sometimes disappearing entirely.

Experiments with Brass.—The tests with brass were made exclusively with brass foil. The zones obtained with the different micro-organisms were similar to those obtained with copper. The organisms tested with this alloy were staphylococcus pyogenes aureus (Fig 1), typhoid bacillus, bacillus coli communis, bacillus anthracis, bacillus choleræ Asiaticæ, bacillus prodigiosus, bacillus pyocyaneus. The average width of the clear zones in fifteen of the experiments with staphylococcus pyogenes aureus is 2.5 millimetres.

Experiments with Silver.—The results with silver were somewhat less uniform than with copper and brass. A number of preliminary tests were made with polished silver coins, but no record of these was kept. There seemed, however, to be no striking difference between the results with the coins and the results subsequently obtained with carefully purified silver.

The zones obtained around the silver with staphylococcus pyogenes

aureus are first a clear zone, one to two millimetres, sometimes even less than one millimetre, followed by a very narrow intensified zone. The intensified zone is sharply marked off from the clear zone and not so sharply marked off on the outside. The intensified zone is better marked with silver than with copper or brass, but it is also narrower. With anthrax cultures the action of the silver varied considerably in different cases. In some cases no zone at all was observable, in some cases there was a zone of about seven millimetres where the colonies were not as thick as on the rest of the plate, and in still others there was a perfectly clear zone of about one millimetre, followed by a zone of five or six millimetres where the colonies were not as thick as on the rest of the plate. With cholera bacilli there was a clear zone, five millimetres broad, followed by an indistinct intensified zone. With typhoid bacilli there was a clear zone about one millimetre; the intensified zone was faint. With the colon bacillus and the bacillus pyocyaneus there was a clear zone about five millimetres wide, then an intensified zone quite sharply marked towards the metal, but shading off gradually on the outside.

Experiments with Gold.—The effect of gold was tested in a few cases with gold foil, and a great many experiments were made with purified gold. No inhibition was observed with staphylococcus pyogenes aureus, colon bacillus, typhoid bacillus, or cholera bacillus. In some cases there was inhibition of the growths of anthrax cultures, and this difference of action is probably to be accounted for by the fact pointed out by Miller, that gold when freshly glowed has no inhibitory power. In those cases where inhibition was noticed the gold had not been glowed for several weeks. The clear zones when obtained were sharply marked and about one millimetre broad, and there was also some intensification outside.

Experiments with Magnesium.—The magnesium used was the ordinary magnesium ribbon. Tests were made only on staphylococcus pyogenes aureus and the cholera bacillus. With both of these organisms there was a clear inhibitory zone, followed by a zone of increased growth, sharply marked off from the clear zone and gradually fading out on the outside. With the staphylococcus aureus the clear zones average about one millimetre, with cholera bacillus the clear zones average about two millimetres. In every case the bit of metal was raised up above the medium by an accumulation of gas bubbles.

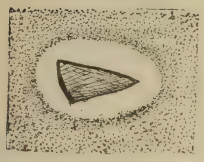
Experiments with Zinc.—A good many experiments were made with ordinary scrap zinc, cast in a sheet, but no note was kept of these. There was a clear zone, however, in every case, and there was probably not much difference between the action of this and of the pure zinc.

With pure zinc all the organisms tested give a broader or narrower clear zone, surrounded by an intensified zone. There is also always a milky discoloration of the medium all around the metal, showing that the metal has been acted upon. This discoloration disappears on the addition of an acid or an alkali.

With staphylococcus pyogenes aureus (Fig. 1) the clear zone measures from five to eight millimetres in breadth, the average being seven millimetres. The intensified zone is very evident, but not sharply marked enough to measure. With cholera there is a wide, clear zone about 1.5 centimetres, and the effect of the metal is seen as far as three centimetres away from the metal. With other organisms the clear zone is usually five millimetres or more broad, followed by a broad, intensified zone that is not sharply marked.

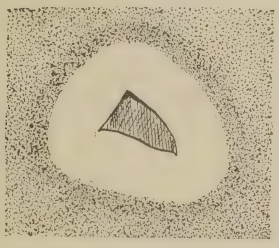
Experiments with Cadmium.—All experiments with cadmium were made with the pure metal. With this metal the reactions obtained with various micro-organisms differ quite strikingly, as a rule. With staphylococcus pyogenes aureus (Fig. 2) there is a clear zone from five to nine millimetres

Fig. 2.



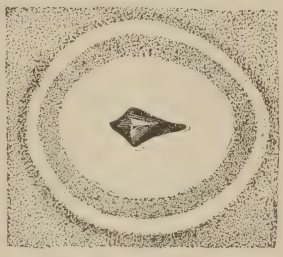
Staphylococcus pyogenes aureus. (Cadmium.)

Fig. 3.



Bacillus typhi abdominalis. (Cadmium.)

Fig. 4.



Bacillus anthracis. (Cadmium.)

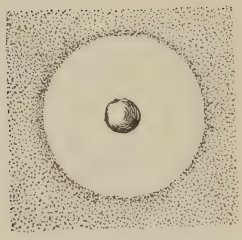
wide, varying in different plates, but no markedly intensified zone. With the colon bacillus the clear zone is about four millimetres wide, surrounded by a very much intensified zone of four millimetres. With typhoid bacillus (Fig. 3) there is a clear zone, five millimetres, then a faintly intensified zone two millimetres broad.

With the cholera bacillus there is a clear zone from five to nine millimetres, not sharply marked on the outside. The most peculiar zone of any with any micro-organism is that obtained with the micro-organism of anthrax and the metal cadmium. In this case (Fig. 4) there is a perfectly clear zone five millimetres wide, then an intensified zone of two millimetres' breadth, and a second inhibitory zone one millimetre wide. In some cases this second inhibitory zone is not entirely free from colonies, but it can always be made out very distinctly.

Experiments with Mercury.—There is considerable difference in the behavior of different micro-organisms towards mercury. The zones obtained with staphylococcus pyogenes aureus are first a clear zone about seven millimetres around the metal, followed by a slightly intensified zone which varies in different cases from one to three millimetres in width. With the cholera bacillus there is a clear zone two millimetres around the metal, then a very narrow, intensified zone that is well marked. With bacillus pyocyaneus there is a clear zone four millimetres broad around the metal and outside an intensified zone, sharply marked towards the clear zone and

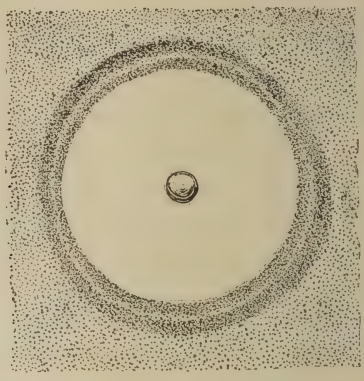
shading off gradually on the outside. With the micro-organism of anthrax there is a broad, clear zone nine millimetres around the metal, surrounded by a very slightly intensified zone that is not sharply marked. The colon bacillus obtained from normal fæces of different individuals and the typhoid bacillus also obtained from different cases show each a characteristic behavior towards the mercury. With the colon bacillus (Fig. 5) there is a clear zone

Fig. 5.



Bacillus coli communis. (Mercury.)

Fig. 6.



Bacillus typhi abdominalis. (Mercury.)

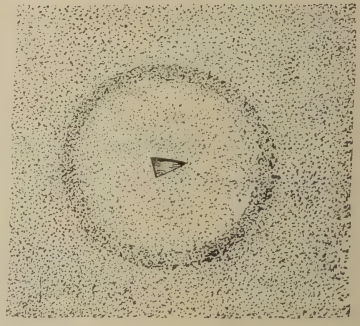
often seven millimetres broad, sharply marked on the inside, then an intensified zone gradually shading off on the outside. With the typhoid bacillus (Fig. 6) the clear zone is much broader, often one centimetre

Fig. 7.



Staphylococcus pyogenes aureus. (Antimony.)

Fig. 8.



Bacillus coli communis. (Antimony.)

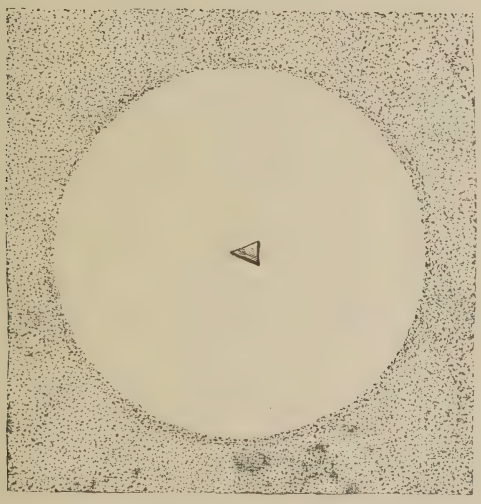
across, but the peculiarity is the character of the intensified zone. This is about two millimetres across, more intense on the outside away from the metal, and in different cases is more or less double,—*i.e.*, there is a narrow, almost clear zone running all around which divides the intensified zone into

two zones. Although the number of experiments with both the colon bacillus and with the typhoid was not inconsiderable, it would hardly be safe to regard the reactions as characteristic until a greater number of tests have been made.

Experiments with Aluminium Foil, with Charcoal, Silicon, Niobium.—A number of tests with charcoal gave no reaction. Aluminium, silicon, and niobium also failed to show any reaction.

Experiments with Antimony.—Antimony with staphylococcus pyogenes aureus (Fig. 7) gives a clear, sharp zone, about one centimetre, then a zone about five millimetres wide where there is diminished growth. In one of the plates with aureus there was only a very narrow, clear zone. The reason for this difference was not apparent. With the colon bacillus (Fig. 8) there is an inhibitory zone, eight millimetres, where the growth of

FIG. 9.



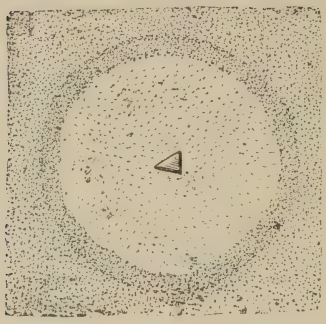
Bacillus anthracis. (Antimony.)

colonies is somewhat thinner than on the rest of the plate, but no clear zone. The intensified zone is quite distinct and about one millimetre broad. With the typhoid bacillus (Fig. 10) there is an almost clear zone, one centimetre, then an intensified zone, two millimetres broad. With the anthrax bacillus (Fig. 9) there is a perfectly clear zone, 1.8 centimetres, then an indistinct, intensified zone. With the cholera bacillus (Fig. 11) there is no sharply marked clear zone, but diminished growth can be made out as far as 1.5 to two centimetres around the metal.

Experiments with Bismuth.—Staphylococcus pyogenes aureus with bismuth gives a clear zone about two millimetres wide, and an indistinct, narrow, intensified zone. With anthrax cultures there is a clear zone one millimetre wide. Pyocyaneus, cholera, typhoid, and colon bacilli gave no reaction with bismuth.

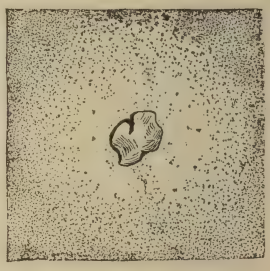
Experiments with Iron.—A bright polished wire nail gave a clear zone about seven to ten millimetres with the typhoid bacillus and with the colon bacillus. There was also discoloration of the medium around the nail. Other organisms were not tested.

Fig. 10.



Bacillus typhi abdominalis. (Antimony.)

Fig. 11.



Cholera. (Antimony.)

Experiments with Nickel.—Pure nickel failed to give any reaction with most of the micro-organisms tested. There was a clear zone with an anthrax culture in the only test that was made with this organism. A nickel five-cent coin gave a clear zone with typhoid bacilli and with colon, but it was possible to detect traces of copper in the medium around the coin.

Experiments with Platinum.—Platinum wire and platinum black failed to give any reaction with any of the micro-organisms tested.

From the above results it is evident that certain metals have at least no marked effect upon the growth of the bacteria tested, and it is notable that it is precisely those metals that are resistant towards chemical reagents in general which fail to show any reaction or do so only to a limited extent. On the other hand, metals that are readily attacked by chemical reagents all exhibit a marked inhibitory action upon the growth of the bacteria. The effect is, therefore, probably due to a solution of the metal in the medium, and putting bits of metal on the cultures is really equivalent to the addition of a small amount of that salt of the metal formed by the action of the nutrient medium. Traces of the metal may, moreover, be detected by chemical reagents in the nutrient medium surrounding the metal. This was done in many cases by simply adding the chemical reagent in small drops to the medium. In some cases the medium was cut out, incinerated on platinum foil, and tested by Behrens's methods.[1] But in many cases a chemical test was not necessary, for the discoloration of the medium alone sufficed to show that the metal had gone into solution, and with the

[1] Behrens, Beiträge zur mikro-chemischen analyse. Zeitsch. f. anal. Chem., Jahr. 30, Wiesbaden, 1891. (Detailed in full in Ann. de l'Ecole polyt. de Delft, 1891.)

copper and brass foils there were visible holes dissolved out of the metal. Behrens states that the solution of the metal is more or less affected by the products of the growth of the different bacteria. However this may be, some metals are dissolved out in sterile media and may be detected by chemical means.

The explanation of the clear zones is thus quite evident, but the explanation of the intensified zones and of the second inhibitory zone, sometimes seen, is not very apparent. The ideas suggested themselves that the bacteria are driven off from the neighborhood of the metal and collected in the intensified zone, or that the presence of a very small amount of the metal in the medium attracts micro-organisms from all sides. Neither of these explanations seems probable in a solid medium, particularly as many of the organisms tested have no independent motion, and, moreover, the results of experiments made to test this point were negative. These experiments were made as follows: Petri dish cultures of various bacteria, particularly of the motile organisms, were made in very dilute agar, so that the organisms could move about freely and at the same time not be much affected by jarring. After these cultures had grown out, bits of metal were put on the plates and then studied with the microscope. Drop cultures made with diluted agar and having a very small bit of metal on them were also tried. The organisms did not seem to move in any one direction more than in any other.

Another explanation, however, seems to me to explain satisfactorily the clear zone immediately around the metals and the intensified zone,—namely, that the dissolved oxides or salts of the metals are in too great concentration in the clear zone, and the trace that is present in the intensified zone may stimulate growth. This does not explain the second inhibited zone.

The length of time it is necessary to leave the metals in contact with the agar, in order to develop inhibitory action, was tried with brass, copper, cadmium, and zinc. Plates of staphylococcus pyogenes aureus were made in the usual way and the metals put on and removed at various intervals. With cadmium there was a clear space where the metal had lain and for one millimetre around where the metal had been left on for a minute. Where the metal had been left on for three or four minutes or more, the clear space usually extended over three millimetres around where the metal had lain. With zinc the results are similar as regard length of time, but the edges of the clear zone are not well defined and there is an intensified zone that is not apparent with cadmium. With brass there was no effect produced by leaving the metal on for thirty-six minutes; after this there was more and more marked inhibition up to fifty minutes, but no clear space except where the metal was left on for a longer time than this. With copper no visible effect was produced in less than thirty-six minutes. After this time there was more and more marked inhibition, but only where the metal had been allowed to lie on for fifty minutes was there a clear space.

Just how far the reactions described above are constant and characteristic will have to be determined by future experiment. It seems probable that they would be constant under the same conditions, since the number of experiments is quite large and the results were gratifyingly uniform, especially in those cases where the figures produced are peculiarly striking. These particularly were repeated a great many times.

THE REMOVAL BY TREPHINE OF FLUID IN ACUTE CEREBRAL MENINGITIS, WITH REPORT OF A CASE.[1]

BY B. MERRILL RICKETTS, M.D.

WHILE the cranial vault has been the seat of many recent and most wonderful surgical exploits, there does not seem to have been any progress made in draining the arachnoid cavity of fluid as the result of any cause. If so, it has not been my good fortune to see any statement whatever as to such results. Believing that any abnormal quantity or quality of fluid wherever found should be immediately removed, and having for several years advocated such a procedure, I, at last, through the courtesy of Dr. B. F. Beebe, had the opportunity of operating for cerebral pressure in a case of acute cerebral meningitis. My inability to find literature upon the subject makes it necessary for me to confine myself principally to personal experience. However, a few quotations and remarks will, I believe, be *à propos*. Cerebral meningitis is both primary and secondary, the primary variety being principally due to trauma, while the secondary follows some local or general infectious disease, such as, 1, tuberculosis; 2, scarlet fever; 3, diphtheria; 4, typhoid fever; 5, pneumonia; 6, la grippe; 7, measles; and 8, whooping-cough. The amount of exudation bears no constant relation to the severity of the symptoms. Whether the disease be primary or secondary, I maintain that the fluid should be removed just as soon as pressure symptoms manifest themselves. This, of course, can only be done by means of opening the skull and incising the membranes and allowing free drainage, accomplished by entering the arachnoid cavity over both parietes of the cerebellum to either side of the median line.

The question here arises as to the continuity of the arachnoid, and whether or not the arachnoid sac is a closed one. No person, perhaps, has done more towards settling this much-mooted question than Dr. F. W. Langdon,[2] of Cincinnati. I herewith append his conclusions:

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[1] Read before the meeting of the New York State Medical Association, held at New York City, October 9, 1894.

[2] Medical Record, August 15, 1891, p. 177.

"1. The arachnoid membrane is a true shut sac, similar in structure and function to the serous membranes of the other great cavities. Its parietal layer is easily separable from the dura at the vertex in the fœtus and young infant, but practically inseparable in this region in the adult. At the base of the skull it is demonstrable as a separate membrane, even in the adult. To assert that the parietal layer of arachnoid is absent because its subepithelial connective tissue has fused at the vertex with the dura (connective tissue) is as incorrect as to describe the great omentum as one layer of peritoneum because its original four layers have become matted and adherent.

"2. The arachnoid cavity communicates freely with the subarachnoid space by means of two foramina, situated in the visceral arachnoid, one on either side of the medulla. For these I would propose the name *lunulate foramina*, from their crescentic or lunulated edges, produced by the attachments of fibrous bands which cross the openings transversely. Subsequent observations, in two instances, confirm the presence of the *lunulate foramen*. In one of these, the basilar process of the occipital and the sphenoid body were cut away from the base and the dura removed, so as to show the foramina *in situ;* thus excluding the possibility of their artificial production during the extraction of the brain."

The arachnoid space may, therefore, possibly be drained from one common opening in the anterior, middle, and posterior fossæ. This I hardly think probable, as the channel or channels connecting the various arachnoid chambers are in all probability obliterated by the pressure of the abnormal amount of fluid. In consequence of their collapse it would be necessary to make an opening into the various fossæ. The ventricles could be emptied by aspiration through the cerebri. This could be done as often as found necessary. I believe that the walls of the ventricles suffer alike with the walls of the arachnoid cavity; however, it is not definitely known as to whether or not these conditions are always associated. The settlement of this question will, no doubt, have much to do with the course of treatment.

If an abnormal amount of fluid in the arachnoid cavity, as the result of acute cerebral meningitis, be always associated with an abnormal amount of fluid in the ventricles, the treatment will be more complicated than when the arachnoid cavity alone is involved. Pressure from any cause, be it solid or fluid matter will seriously influence the lymphatic system and assimilation of any character.

On July 15 I was called by Dr. Beebe to see a white male child, eighteen months old, convalescing from pertussis. The doctor's first visit was on July 7, although the child had been very much indisposed for two or three days previously. Pulse somewhat rapid, temperature two or three degrees above normal, bowels regular, and the urine passing at regular intervals. The pupils were very much contracted, and did not respond to light. The ordinary remedies for acute cerebral meningitis were given, but the condition rapidly became worse; coma becoming profound, with inability to take food or to move the extremities. There was, at the time of my visit, retention of

urine, with but small watery movements from the bowels. The respirations were both shallow and rapid, face livid, skin dry, sallow, and warm. There was left facial paresis, indicating that the pressure was the greater upon the right side; also of the muscles of deglutition, accompanied by a gurgling sound. Solid or liquid matter of any character had not passed the fauces for twenty hours. Emaciation was extensive.

In the presence of Drs. B. F. and William Beebe, Edwin and Joseph Ricketts, and my students, Wallingford and Laughlin, I proceeded first to perforate the right parietal bone, one inch from the median line and the same distance from the lambdoidal suture. An antero-posterior incision was made, two inches in length, through the integument and periosteum. These membranes were held with retractors while the bone was penetrated with a chisel, making an olive-shaped opening. The dura immediately bulged forth in the opening, thus indicating great pressure from within. This membrane presented a dark, congested appearance, and where incised gave off a dark, bloody, serous discharge. There was no extradural fluid, nor did any subdural fluid escape or seem to be present. However, the moment the arachnoid cavity was opened a clear, straw-colored fluid escaped in large quantities and continued to flow.

Within five minutes the facial paralysis had disappeared; the left leg was drawn up, and the left arm thrown across the chest. The pupil upon the left became dilated, and the general condition of the child improved. I then hastily made a similar opening upon the left side at the corresponding point, in the same manner, both wounds having been made without an anæsthetic, the general sensibility being so benumbed. Fluid of the same character flowed in a similar manner upon opening the arachnoid cavity. Fifteen minutes had not intervened from the beginning of the first to the ending of the second operation. At the end of this time the child cried aloud, could move its extremities to any position, moved its head to either side, the gurgling noise in its throat ceased, and milk, water, and whiskey were swallowed with apparent relish. Artificial heat was applied and warm drinks given, an exceedingly tight and adherent prepuce removed and the glans bared. A large quantity of urine was voided and the general condition of the child entirely changed for the better. It continued to take a sufficient quantity of food, and the pulse became less frequent and with a better volume. The respirations became thirty, where they had been as high as fifty per minute. The body was cleansed with warm water and protected with wool. The fluid continued to flow from both openings into the arachnoid cavity. Its quality continued the same, while the quantity became diminished. The scalp and periosteum were drawn together with silkworm-gut, leaving a small opening for drainage at the lowest point. A fifty-per-cent. solution of peroxide of hydrogen was used to irrigate the wound and as much of the cavity as could be reached.

The subsequent history of the case was as follows: At 2 P.M., patient's condition much improved, temperature 102° F.; 2.30 P.M., temperature began to rise; 4 P.M., temperature 106° F.; frequent baths were given; 5 P.M., temperature 104° F.; 7 P.M., temperature 104.4° F.; pulse feeble.

Whiskey subcutaneously; also nitrate of strychnine, grain $\frac{1}{40}$, and nitro-glycerin, grain $\frac{1}{100}$; legs and arms were drawn up at this time, showing sensibility and the power to move extremities. Evacuation of bowels and bladder; condition improved very much; pulse and respiration improved and less frequent; 10 P.M., child vomited; whiskey by rectum; nitrate of strychnine, grain $\frac{1}{40}$, subcutaneously; vomited several times; lime-water given and vomiting ceased; digitalis, ♏iii, at 6 A.M.

On July 10 the child vomited soon after 9 A.M. The prepuce was again removed and urine was at once voided to the amount of about sixteen ounces. Temperature fell from 104° F. to 103.25° F.; 11 A.M., vomited, temperature 105.4° F.; 1 P.M., continued to vomit occasionally. Twitching left side; this continued until

4.25 P.M., when dissolution took place, twenty-eight hours after the operation. While the flow of fluid was not regular, it continued from the time of operation until death ensued.

I think that the operation should be made in these cases as soon as pressure symptoms manifest themselves. As it is, nearly all these cases die without an operation. The question now is, Will any of them be benefited or cured if operated upon during any particular time in the course of the disease?

THE METHOD OF MAKING AUTOPSIES AND THEIR PROPER INTERPRETATION.

BY MINOR MORRIS, M.D.,

Professor of Pathology, Central College of Physicians and Surgeons, Indianapolis, Indiana.

METHOD is just as essential in the making of autopsies as it is in major surgery, where complete mastery of detail and technique is indispensable. Method secures accuracy of observation, economy of time, thoroughness of operation, and reliable results.

The principle which should govern any special method is to obtain as far as possible an inspection of the various organs in their normal relations. In accordance with this rule we open the abdomen first for inspection, but dissect it after the thorax. Were the abdomen dissected first, the attachments of the diaphragm would be cut, thus disturbing the visceral relations; and severing the large vessels would empty the chambers of the heart, giving us wrong impressions of its condition.

Let it not be said that these are refinements of pathological diagnosis. The scientific value of an autopsy depends solely on its accuracy, and the Father of Pathology well observes, "The faulty performance of an autopsy readily makes obscure, cases otherwise clear and simple; and those at all ambiguous, entirely unintelligible."

The autopsy naturally begins by an inspection and external examination of the body, with reference to various medico-legal points. When the examination is made some time after death, the differentiation of injuries from post-mortem changes in the skin is not easy; and large interests, as in accident and life insurance, may depend upon the proper interpretation of such small points.

The method of making incisions may seem a small matter, but every one knows how an awkward operator can consume time and mutilate parts when a few well-directed strokes of the knife would clear the abdomen or thorax of any or all the organs. The solid organs should be incised so as to expose their whole surface in a given plane. The kidney is divided from its convex border through the pelvis, the lungs from apex to base, the liver and spleen

in their long axis. In this method we have a comparative view of the different structures of the organs.

The heart and lungs can be examined *in situ*, but usually I prefer to sever the trachea, into which I insert a finger, and by traction and a few cuts remove lungs and heart together.

The chambers of the heart can now be examined by opening along the right and left borders. If, in obscure cases, death has resulted from asphyxia or paralysis, the right and left ventricles will be respectively overfilled. The organ being now cleared of its attachments, the integrity of the valves can be tested by allowing water to flow into the aorta and pulmonary artery, by which the organ should be suspended. If the water slowly drains away, it is due to filling up of the coronary arteries.

The proper interpretation of valvular conditions is not always easy. We may have grave lesions and no insufficiency, while this may exist from disease of the heart muscle and not be recognized at the autopsy. It is in these conditions that the meaningless diagnosis of heart failure is made, when careful work would usually clear up the case. In opening up the valves with the scissors, care must be taken to draw aside the pulmonary artery, which would otherwise be divided by cutting out from the left ventricle through the aorta.

The examination of the abdominal viscera is best done in the order of their presentation, and by following a certain routine the operator becomes expert and not liable to overlook anything.

The omentum and spleen would naturally come first. The urinary organs should be taken consecutively, beginning at the kidneys, then the genitalia and rectum; the digestive organs first met with are the stomach and duodenum, which are best opened *in situ* by one incision, following which the neighboring liver, pancreas, and mesentery can be investigated. For the sake of cleanliness the intestines are left to the last.

The proper interpretation of the conditions found in the viscera requires the broadest knowledge of medicine. To only discover a lesion is a small task, but its histological history and its primary and secondary influence on the organism are problems to test the pathologist's resources. To determine how far a cirrhosis present in the liver is primarily or secondarily a part of the general process of interstitial nephritis is perplexing; or in case of a disorganized spleen with caseous areas in one apex, it will be hard to say how much was post-mortem change, and how far it was a factor in producing death.

The removal of the skull-cap can be done by the circular method of sawing off the calvarium, or, what is easier and quicker, to cut out an elliptical piece from the vertex, beginning at the ears and going with the saw anteriorly and posteriorly to the site of the fontanelles. This does not disturb the tissues of the face, which recommends it for private cases.

The brain can be dissected either by first opening the lateral ventricles and then making concentric long incisions, laying open the brain like the

leaves of a book; or horizontal sections can be made with a broad knife from convexity to base, which admirably exposes the region of the internal capsule, where minute hemorrhages are oftenest looked for.

The brain should be minutely subdivided, for the reason that a small lesion, sufficient to cause profound disturbance or even death, might, otherwise, be readily overlooked. The interpretation of pathological findings will be materially aided by a good clinical history. This is no reflection on the resources of pathology, for many diseases may run a fatal course and leave no clue as to their existence save as chronicled in the clinical history. I have seen expert pathologists at a loss to account for death when the clinical history cleared up the case.

What is the attitude of physicians as a body towards pathological investigation? It is not exaggeration to say that there is a lamentable indifference on the subject. The busy practitioner says he has no time for making autopsies, and thus correct or prove his diagnoses. It is doubtless often more comfortable not to have an autopsy. The dead-room is the physician's Nemesis. It reminds him that snap diagnosis and superficial examination bring surprises and humiliation. There is nothing like the autopsy to teach men charity for their fellow-practitioners. In teaching us our errors it teaches us our best lessons.

The large place pathology has come to occupy in our schools is sufficient evidence of its recognized value to the physician. I doubt if there is a better criterion by which to estimate a physician than his method of conducting an autopsy, and the interpretation of its conditions. The guiding principle in medical education is that if disease is to be treated intelligently its histological basis must be clearly understood. If our physicians are to take interest in pathology they must do pathology as students with the opportunity of making autopsies. The holding of autopsies is also an educating influence with the public and should always be encouraged. It tends to remove prejudice, besides contributing to the interest of a physician's work and to his medical knowledge.

Pathological principles decide the amputation of a limb, the prediction of life's duration, or the adoption of intelligent treatment. Their thorough understanding is indispensable. It need not be argued that success does not depend upon our pathological knowledge, and that people care nothing for the scientific value of their ailments as long as the doctor gets them well. Let us not lose sight of the great advancing principles of our craft in the race for success in the practice of medicine. Many a physician scores a great success in practice whose pathology is a mystery; but this is not the rule, for it logically follows that he who understands disease best will treat it best. The treatment of the patient and the treatment of his disease are based upon two widely different philosophies.

As the physician becomes engrossed with practice, money-making, and all that success means in the profession he is prone to forget the scientific motive forces of his advancement. This is not true of the great lights of

medicine, which rather burn more brilliantly with age, and that because they are constantly renewed at the exhaustless urn of science.

John Locke, while engaged in the arduous work of gaining a livelihood as a London practitioner, found time to write his "Human Understanding," which has entirely eclipsed his fame as a physician. Professional cares must not cause the neglect of the essential studies which alone can keep us abreast of medical progress.

The work of making better pathologists of our physicians begins with the student, and when he is sent out competent to make pathological examinations and properly interpret them, then we shall have attained one of the aims of progressive medicine.

CLINICAL LECTURES.

ROTARY LATERAL CURVATURE OF THE SPINE, AND ITS TREATMENT BY REMEDIAL GYMNASTICS.

A CLINICAL LECTURE DELIVERED AT THE POLYCLINIC HOSPITAL.

BY H. AUGUSTUS WILSON, A.M., M.D.,

Professor of Orthopædic Surgery in the Philadelphia Polyclinic; Clinical Professor of Orthopædic Surgery in the Jefferson Medical College, and in the Woman's Medical College.

For want of time I shall not be able to speak of the pathology or etiology of rotary lateral curvature, but direct attention especially to the cases which are classed as idiopathic. These are the cases which generally occur in young school-girls who, by errors of posture in sitting at their desks, standing, or lying in bed, have acquired faulty positions of the spinal column. There are almost invariably to be found a systemic debility and absence of correlation of muscular forces. The muscles or groups of muscles do not work in unison, in opposing each other, but by their unequal action the over-active groups tend to produce primarily asymmetrical conditions due to the inability of the patient to maintain a correct posture, and there follows an alteration in the relationship naturally existing between the axes of the hips and the shoulders. The alteration of the axes referred to is as conspicuous a factor in the production of rotary lateral curvature as inequality in the length of the legs, or other asymmetrical conditions, which are well-known and recognized causes of this deformity. The ultimate effect of this prolonged alteration of the natural position of the body is to produce changes in the natural shape and contour of the vertebrate bodies. These become wedge-shaped, being compressed upon the concave side, or the side where the

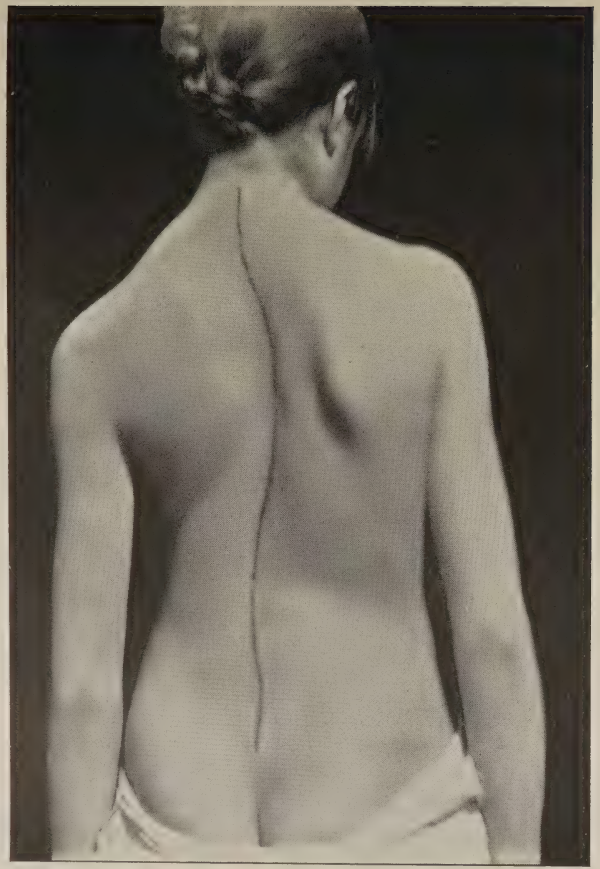


FIG. 1.—Idiopathic rotary lateral curvature.



FIG. 2.—Posterior angular curvature produced by tubercular caries.

pressure is greatest; or, as taught by some, the bony growth is more rapid upon the convex side, the side where the pressure is least.

This alteration of the bones of the spinal column indicates the existence of a softened condition of these structures, and such must be the case, or it would be impossible to explain the production of those serious deformities which are so often found. I have alluded to the lateral curvature only, and will now direct attention to the existence of rotation as a most conspicuous element in these cases. The rotation ultimately becomes fixed because the bones of the spinal column become permanently deformed, and there is generally an increase in rotation as well as in lateral curvature.

With these few preliminary remarks, let us study the clinical features of the patient before you. First, we may eliminate inequality in the length of the legs, as we observe that the hips present a perfectly normal aspect. The right shoulder occupies a position higher than normal, and the left shoulder is depressed to a corresponding degree, the head being carried to the right side, so as to have the centre of gravity placed in its natural position, midway between the hips. It will be observed that the right shoulder-blade is in an altered position as compared with that of a normal scapula, for its upper and outer border at the shoulder-joint is thrown forward, while the apex is thrown posteriorly. The left shoulder is held anterior to its normal position and the apex of the left scapula is also anterior to its normal position.

By placing the first and second fingers of the left hand one upon each side of the spinous processes, and carrying them downward from the cervical region, it will be found that as the patient stands before you there is a deviation, which is clearly indicated by the line on her back (Fig. 1), and a small curve in the cervical region, with the convexity to the left side, while the lateral curvature is greatest in the dorsal region, with the convexity towards the right side. There is also a small amount of curvature in the lower dorsal and lumbar region, with the convexity to the left. It will thus be seen that there are three curves present, the most exaggerated being in the mid-dorsal region. The lateral curvature will account for the high right shoulder and the lower left shoulder, but will not explain the position of the shoulder-blades,—why the apices of the scapulæ are forced into the false position which they here occupy. Again, with the fingers upon the spinous processes as above, it will be found that, as the examination proceeds towards the mid-dorsal region, the line of the spinous processes, instead of being in a direct line anteriorly and posteriorly, as in the upper cervical and lower lumbar vertebræ, corresponds with a line drawn from the left side of the body posteriorly to the right side anteriorly, diagonally, thus demonstrating the presence of the phenomena of rotation. This rotation of the bodies of the vertebræ naturally carries with it a rotation of the articulation of the heads of the ribs attached to the vertebræ that are rotated. This rotation, therefore, carries the ribs into a plane posterior to their normal position upon the right side and into a position anterior to

their normal position upon the left side. This will explain the prominent scapula upon the right side and the depression which makes the left scapula so inconspicuous.

With the patient's arms held high over the head she will bend forward, flexing her spine so as to make as great an arch as possible; and in this position it will be observed that the spinous processes are all in a direct line, as they would be in a normal body. The prominence of the scapula of the right side has been removed and the back appears to be that of a normal person; but as soon as she assumes the erect position, the clinical features to which I have directed attention are again assumed.

You will observe that, while she is apparently well formed, the muscular development is very slight. She quickly assumes an indolent position in which all the features of her deformity are greatly exaggerated, and while she possesses the ability temporarily to hold herself quite straight, it lasts but a moment, and therefore her deformity has the tendency to rapid increase. The examination of her muscles develops the fact that they are all feeble in their action, although it is impossible clearly to demonstrate any absolute deficiency. The erector spinæ mass appears more prominent upon the left side because the lumbar vertebræ are rotated into such a position as to throw into prominence the muscles and fat overlying it.

Such, therefore, are the clinical features of this case, and the question for consideration will be the remedial measures for her recovery, as well as for the prevention of the increase of her deformity. As the deformity has been produced by muscular inability to hold the trunk erect, it is clearly indicated that we must attack the muscular development if we would have any hope of producing a permanent result. Braces constructed of steel, plaster of Paris, in fact, every conceivable variety of material have been resorted to for the purpose of holding the spine erect, with the hope of preventing an increase in the bony deformity, but invariably with results so disastrous as to warrant a careful consideration of their inefficiency, and, I might say, of their effect in increasing the deformity.

Simply holding the spine, whether by means of braces or by preventing the patient from standing, or by forcing her to continue for a long time to occupy the position of recumbency, will naturally diminish the activity of all those muscles which have for their object the maintenance of the erect position. So, while the deformity may be *concealed* by apparatus, the moment the apparatus is taken away the patient falls into the faulty position again, because she lacks the ability to hold herself erect. It is, therefore, absolutely essential that anything that tends in the direction of muscular disuse should be dispensed with as quickly as possible. It must be borne in mind that the application of braces in incipient cases is here condemned, though the occasional necessity for rigid mechanical appliances in cases where great deformity has resulted is well recognized.

Not alone is it unscientific and irrational in these cases to use braces, corsets, or tight clothing of any kind, but the muscles should all have free

play, with no more covering than the exigency of the case may require. A patient with rotary lateral curvature, in as feeble condition as the one before you, will not be able to take severe gymnastic exercise of any kind, but must have developmental exercises of a progressive character, carefully selected to suit the requirements of her individual case. It is just as important for such a patient to have an individual study and application of remedial measures as it would be were she afflicted with any disease, and therefore it is important for us to consider the advisability of sending such a patient to a gymnasium or of placing her under the care of any one not skilled in medical science. For the reasons already stated, such patients should not be given exercise in classes, for what may suit one may seriously injure another. It is, therefore, strongly urged that individual, studious, and prolonged attention be given to the development of her muscular system. It is not wise to attempt to develop only those muscles which are weak or acting inefficiently, because I believe that the weakened muscles can be brought into action and into the proper relationship with opposing muscles and groups better by a development of the entire body, gradually produced.

It will very quickly become monotonous and tend to a discontinuance of the exercises if but a few muscles are developed by movements which are in themselves tiresome; but by changing the form of the movements and going from one extremity to another, the patient will quickly become interested in her work, and development will thereby be more rapidly increased. A feature in the recovery of these cases by developmental gymnastics is the power of the mind over the body. Unless the physician can obtain the hearty co-operation of the patient, the determination to do all that is required and in the way specified, it is absolutely useless to attempt any treatment. As soon, however, as this co-operation and confidence in the physician is obtained, simple calisthenic movements or some form of Swedish movements can be taught (in one's office or at the patient's home) very much in the same way that a lesson is given in music, the patient then being allowed to practise for a period of a week before a rehearsal is given by the physician, when new movements and new applications can be made. Ordinarily I direct the patient to begin with a half-hour every night and morning, and to increase the time as her strength develops. This period of exercise should be followed by a cold sponge-bath, a quick rub-down with a coarse towel, and repose in recumbency for fifteen to twenty minutes.

It has been a matter of very great satisfaction to me to see patients who were before unable to carry on the ordinary avocations of school-girl age develop a robust and vigorous system, and not only to observe the rapid development of the muscular system, but also to see the curvature gradually diminish and finally disappear.

Referring again to what I said in the early part of this lecture, about the softened condition of the bones, it will be apparent that active destruc-

tion of the normal contour of the bones may be produced by excessive efforts at gymnastics. It is very largely for that reason that it is wise to dispense with all forms of gymnastic apparatus and machinery, and to rely entirely upon the patient's body for weight, and upon the natural action of the muscles in opposing each other for the development of the entire system, for then the conditions are well suited to the requirements of the patient, and change as the patient becomes stronger.

This plan of gymnastic development of the muscular system for the correction of rotary lateral curvature is applicable only to those cases of spinal curvature which are produced by conditions other than tubercular osteitis, and the phenomena should be clearly demonstrated before such activity of the spinal column is permitted.

Not only is the plan of treatment spoken of as applicable to the correction of rotary lateral curvature inapplicable to the treatment of the curvatures produced by tubercular caries of the spine, but the rational plan of treatment for tubercular caries of the spine would be inapplicable to rotary lateral curvature.

It is, therefore, of the utmost importance that a careful diagnosis be made in the beginning, so as to avoid the mistake of confusing rotary lateral curvature with the curvatures of Pott's disease or those produced by tuberculous caries of the spine. I have seen a great many patients, with active inflammatory bone-diseases produced by a tubercular osteitis, who have been treated by the methods of gymnastic development inappropriately applied to their cases, with the result of rapid increase in the deformity, produced by the breaking down of the tubercular bone. Well-marked cases, such as is shown in Fig. 2, produced by tubercular osteitis of the spinal column, and patients with considerable rotary lateral curvature cannot be mistaken, but the difficulty of making a diagnosis in the very incipiency of either of these troubles is sometimes exceedingly great.

The little patient whose condition you observe in Fig. 2 has a posterior angular curvature produced by the destruction of the bodies of the dorsal vertebræ which are involved in tuberculous caries. You will see that he is carefully supporting his upper trunk by means of his arms placed upon the table. He is one in whom an erroneous diagnosis was made, and is an illustration of the ultimate deformity that may result. His own posture indicates clearly what his case requires, and had his actions guided those in the care of his case early in its history, he would have had mechanical support and fixations instead of being allowed freedom of movement.

Time will not permit, this afternoon, of a more detailed study of the differential diagnosis of slightly-marked deformities of the spinal column, but enough has been said, I think, to direct careful attention to the necessity for early diagnosis and to the application of remedial gymnastics in rotary lateral curvature, together with the avoidance of anything which restrains free movement.

PNEUMONIC FEVER.

BY DR. LANCEREAUX,

Member of the Paris Academy of Medicine; Physician to Hôtel-Dieu, etc., Paris.

GENTLEMEN,—I am going to speak to you to-day of a common malady, and I was going to say a very simple one, if everything were not difficult in medicine. I speak of pneumonia,—but when I use this word I am aware that it is a defective one; I should say pneumonic fever, for this is a general disease with a localization in the lungs, which are the seat of a fibrinous-albuminoid hepatization, without suppuration. Therefore, it is more exact to say pneumonic fever, for I speak of it and not of general pneumonia.

This disease has several characteristic symptoms. It begins in the healthy individual suddenly, with a severe chill and fever, followed in about twelve hours by a dull or sharp pain in the side over the region of the nipple, which, when very severe, may give rise to special therapeutical indications. In cases in which the pneumonia is limited to the apex of the lungs, the stitch in the side may be absent. These symptoms are due usually to a pneumonia, but there are two diseases—erysipelas and small-pox—whose invasion resembles that of pneumonia, but whose later course will not long prevent a correct diagnosis.

The temperature rapidly rises to 103° or 104° F., and presents a remarkable regularity. The pulse and respirations are rapid. The cough is at first dry, then there is a mucous expectoration which is soon stained by blood. This mucus varies in color according to the modification which the blood undergoes during its retention in the pulmonary alveoli. You will observe delirium and cerebral irritation, which should put you on your guard against coma. The digestive functions may be suppressed and meteorism may be present. Jaundice and albuminuria may join themselves to the other troubles, and show that the kidneys and liver are affected.

A slight remission of the symptoms may occur in two or three days, and increase again about the fifth day. A more definite remission is followed on the seventh or eighth day by a crisis, when the fever falls abruptly. All cases, however, do not end so favorably, for many die of this disease. What is the cause of death in pneumonia? Sometimes it is due to elevation of temperature, which is so high that the patient cannot support it, and dies very quickly. Cardiac insufficiency, due to a high temperature, may cause death. Secondary inflammation producing cerebral, renal, and hepatic insufficiency may be the cause; and, finally, death may be due to the lesion of the lungs; for instance, when the lesion is double or very extensive in nature. The blood then does not pass into the capillaries, the right ventricle no longer contracts, clots form in the heart, and the patient succumbs.

The prognosis in pneumonia varies with the condition of the patient. When it is secondary to an epidemic disease its gravity will depend upon the nature of the disease. The age of the patient influences the prognosis. In the child pneumonia is not so dangerous as in the adult, where it is more serious, the danger increasing when certain conditions are present, such as alcoholism, venereal excesses, overwork, etc. In old people it is insidious and grave, because they are usually in a state of arterio-sclerosis, which may cause death.

What shall we do for this disease? Let us say first of all that there is no regular treatment for pneumonia. If there were, its efforts would be addressed, not to the effects of the disease, but to its anatomical lesion. First, then, understand the normal evolution of the disease, and take the indications for treatment from the temperature and the lesion. If evolution is normal, the first thing to do is to do nothing; for all medication that is not useful will do harm. For excess of temperature and pulmonary congestions there are two useful medicines,—antipyrin and ipecacuanha. Cold water is also useful in high temperature. If the lesion is extensive, vesication will do good; and if the urine is scanty, digitalis can be used. When the heart weakens, use cold water, caffeine, and ether.

The indications furnished by the patient are very important, as you will observe by these two cases. One, a man, forty-five years of age, was taken with chills about ten o'clock at night, and with a stitch in the side at two the next morning. He vomited, and his temperature ran up to 104° F. The next day his temperature was 103° F., and the rusty sputum appeared. Albumin was found in his urine, but as he used alcohol, we decided that the albumin was due to renal alteration caused by the alcohol. He had not slept for a long time, so we gave him a little alcohol and digitalis and chloral with morphine syrup. After sleeping he improved rapidly, and in three days his temperature fell to normal.

The second patient was taken ten days ago with delirium, severe chills and fever, followed in two days by a pain in the side. The temperature was 103° F. The crisis occurred on the seventh day. The symptoms in this case were intermittent, and a disease of paludal origin was suspected; so, as the pneumonia was of a light form, the malaria only was treated. This was a pneumonia in a malarial subject. You see, therefore, that the treatment must vary in each patient. If you have to treat a pneumonia in a case of arterio-sclerosis, with renal and heart insufficiency, scanty urine, and a temperature of 104° F., your only chance of curing it will be by increasing urination by giving digitalis, purgatives, and even emetics; otherwise the excessive temperature will aggravate the urinary insufficiency, and delirium, coma, and convulsions will follow.

As to the etiology of this disease, I shall only say that it is seen in Paris from December to May, so it is a winter fever. The cause we do not know. I do not believe in the microbe, the famous pneumococcus; for if the disease is a seasonal one, why is this microbe dangerous in some months

and harmless in others? Pneumonia comes here during dry weather, when the wind is northeast, and would seem to be brought by the air. As to prophylaxis, great care should be taken of the mouth in children and old people during this dangerous portion of the year; and if cold is not a real cause of the disease, it is certainly a predisposing one; therefore all weak persons should spend the winter, if possible, in a mild climate.

REVIEW OF MEDICINE.

MEDICINE.

IN CHARGE OF JOHN H. MUSSER, M.D.,

Assistant Professor of Clinical Medicine in the University of Pennsylvania; Visiting Physician to the Presbyterian and Philadelphia Hospitals.

AND

J. A. SCOTT, A.M., M.D.,

Physician to the Out-Patient Department of the Pennsylvania Hospital; Assistant Demonstrator of Morbid Anatomy in the University of Pennsylvania.

Diagnosis of Abdominal Tumors. (Reprinted from the *New York Medical Journal*, 1894.) By William Osler, M.D., of Baltimore.

This highly interesting series of lectures cannot be appreciated in abstract. An outline is nevertheless instructive.

I. Tumors of the stomach are formed either by the organ itself in a condition of abnormal dilatation or contraction or by nodular and massive outgrowths of its walls. A detailed report of ten cases of dilatation of the stomach is given. In all of these cases the tumor could be seen, waves of peristalsis could be detected, and a pyloric tumor, more or less well defined, could be felt. The author makes a strong plea for a thorough and systematic examination in every case, and holds that unless all the methods of physical examination are exhausted justice has not been done the patient. *Inspection* gives the most important information, and the ten cases were diagnosed on sight. A dilated stomach may occupy every region of the abdomen except the upper part of the epigastrium. The most prominent distention is usually in the left half of the umbilical region. The greater curvature is sometimes as low down as three centimetres above the pubes. The lesser curvature is usually more distinct, and sometimes is seen below the navel. Inspection further reveals the presence of peristalsis, due to the hypertrophy of the muscular coat and the increase in the activity and frequency of the movements. The peristaltic waves usually pass from left to right; less frequently there is antiperistalsis. The exposure of the abdomen will usually cause these motions, while at times it is necessary to excite them

by a stimulus. In many cases a slow, irregular protrusion is noticed here and there, more frequently towards the greater curvature, raising the abdomen into a boss or prominence. These movements usually occur with peristalsis, and throw out the contour of the organ in bold relief; but they may occur in enormously distended stomachs without peristaltic waves. *Palpation* reveals the existence of the splashing sound, *clapotage*, which is always present; the lowest level of the organ; the gurgling of gas through the pylorus, a valuable sign in case of doubtful tumors; and the presence or absence of a pyloric tumor. The varying degree of dilatation of the stomach would make a pyloric tumor vary in size from day to day. *Percussion* combined with palpation will bring out the *clapotage* most clearly. It also brings out the extent of stomach tympany, which varies with the amount of fluid contents. Inflation should be practised, except when there is a suspicion of gastric ulcer. *Auscultation* gives little information of value, the succussion splash is heard by sudden depression of the diaphragm. The experiments of Von Mering show that the stomach is never empty, and after the tube has been used fluid will reaccumulate without more being taken in. This explains the dryness of the skin, scanty urine, and wasting noticed in connection with dilated stomach. There is no condition that can be confounded with dilatation of the stomach if the examination is thoroughly and systematically made. A dilated stomach causing a prominent abdominal tumor is almost invariably due to stenosis of the pylorus. Rarely the tumor is caused by atony of the stomach, and occasionally by change in position of the organ. Only in very exceptional cases are the latter two associated with peristaltic waves.

II. The stomach itself in a state of contraction may form a definite, palpable tumor in occlusion of the œsophagus and when there is a diffuse thickening of the stomach walls with contraction of the lumen. The notes on a case of the latter character are given in which the tumor felt like a ridge in the left hypochondrium, extending across the middle line as far as the right parasternal line. This case was due to a diffuse, infiltrating carcinoma of the stomach wall, and is only to be told from cirrhosis of the organ by microscopical examination.

III. The pylorus, though normally covered by the anterior margin of the liver, may be felt in thin-walled persons, particularly those suffering with atony of the stomach. It presents itself as a narrow, tubular structure with alternate relaxation and contraction and the bubbling of gas through it. The only fixed portion of the stomach is the cardiac orifice. Only about one-third of the stomach is in contact with the abdominal wall. The histories of thirteen cases of *nodular* and *massive tumors* of the stomach are given. These cases are classed as tumors of the pyloric region, tumors of the body of the stomach, and massive tumors occupying a very large area of the organ. A tumor-like formation at the pylorus may be due to cicatricial contraction and thickening about an old ulcer, hypertrophy of the pylorus, and cancerous growths. The pylorus may be invaded by

growths from continuous organs, and dislocation of the pylorus and adhesion to neighboring organs may cause stenosis. These tumors are usually associated with dilatation of the stomach. The history of dyspepsia and vomiting of blood will often point to the true cause in cases of contraction about an ulcer. Tubular and small nodular tumors present difficulty in the accurate diagnosis of the nature of the growth, since the symptoms are more those of chronic dyspepsia and not of extreme dilatation. Three cases are reported in which the tumor was due to thickening of the pylorus from chronic gastritis, and one in which it was due to a slowly growing scirrhus. Extensive nodular growths at the pylorus constitute a large majority of the cases of pyloric tumor and are usually cancerous. The tumors of the foregoing classes are always larger than would be expected from examination through the abdominal wall. Examination in the knee-elbow position often gives valuable information as to the position and relation of a tumor. A tumor on the anterior wall may be due to extension from the pylorus or to a growth involving only the stomach wall. These cases frequently die from perforation and peritonitis. The perforation may take place externally, into the colon or into the pericardium. The most difficult cases to recognize are those in which the walls of the stomach are extensively infiltrated. Tumors of this kind are to be differentiated from growths of the kidney and spleen. Though only a small section of the stomach is available for palpation, a very large proportion of all tumors of the organ may be felt, owing to their greater frequency at the pylorus and to the frequent depression of the organ. Pyloric growths are often excessively mobile, one case being reported in which the tumor could be pushed down into the right and left iliac fossæ. Large nodular and massive growths are invariably cancerous.

Tumors of the Liver.—Owing to the fact that the liver extends entirely across the upper portion of the abdominal cavity, tumors of the organ may project to either side of the median line in front, more rarely into the left pleura behind. In women the organ is frequently so dislocated that a large part of the convexity is in contact with the anterior abdominal wall. The usual tumors of the liver are the liver itself, abscess, gumma, and cancer. Hydatids and tubercular tumors are found. A tumor composed of the liver itself, and which may pulsate, sometimes occurs with advanced mitral disease with tricuspid insufficiency allowing the blood in the hepatic veins to receive pulsation. The case reported showed also a cake-like deformity, due to perihepatitis, and a large amount of ascites, due to contraction of the liver and to chronic peritonitis. Four cases of abscess of the liver are reported, each with a definite, palpable tumor. Only one of the cases presented the amœba coli. In the diagnosis of abscess of the liver the antecedent conditions have to be taken into account. The most common condition is dysentery. The toxic features (irregular fever, chills, and sweats), and the local symptoms, which are increase in the size of the liver and tenderness on pressure, must also be taken into account. When abscess is suspected a long aspirator

needle should be freely used. Four cases of syphilis of the liver are reported, two presenting definite tumors. Gummata, when rapidly growing or after cicatricial contraction, form the so-called "botryoid" liver. Cancer of the liver, with the exception of fibromyoma of the uterus, forms the largest tumor met with in the abdomen. The diagnosis of the secondary growths is easy. Primary cancer, especially when associated with cirrhosis, is difficult of recognition. The larger proportion of cases are secondary, and are characterized by rapid growth, profound cachexia, and often jaundice. The new growth may be diffusely scattered throughout the organ, producing uniform enlargement; but more commonly there are large, umbilicated outgrowths. In a case of sarcoma of the liver the masses were soft and fluctuating, resembling abscess. The primary lesion of cancer of the liver is to be looked for in the stomach, intestines, uro-genital tract, or breast.

Tumors of the Gall-Bladder.—The gall-bladder may be dilated or its walls infiltrated with a new growth. In a large proportion of these cases gall-stones are present. A dilated gall-bladder may form a small, firm, rounded projection beneath the edge of the liver; a pyriform tumor, varying in size and freely movable; a very large tumor reaching to the pelvis; or a huge cyst occupying the entire abdominal cavity. The usual causes of dilatation are blocking of the cystic duct with calculi or compression of it by a new growth. Permanent blocking of the common duct does not necessarily lead to marked distention of the gall-bladder. The contents of the dilated organ may be a clear mucoid fluid when the obstruction is in the cystic duct, bile when the obstruction is in the common duct, pus or a puriform, bile-stained fluid when suppuration has occurred, or an albuminous or bloody fluid in cancer. A gall-bladder tumor is distinguished from growths in the colon and at the pylorus by the differences in the symptoms and by systematic local examination, including inflation, if necessary, of the stomach and intestines. From movable kidney, which emerges beneath the liver margin, gall-bladder tumor is told by the disappearance of the tumor with the patient recumbent and reappearance on change of position; a movable kidney can be held down and prevented from returning during an expiration, and above a movable kidney the edge of the liver may be felt with great distinctness. The tongue-shaped process of the anterior margin of the liver, described by Riedel as due to tight lacing, may be associated with distended gall-bladder and give some trouble in diagnosis. [Attention was called to a case of this character by the writer many years ago, and reported in full in the *Philadelphia Pathological Society Reports.*—J. H. M.] An ill-defined, nodular tumor at the liver edge may be a dilated gall-bladder filled with gall-stones. Cancer of the gall-bladder is most common in women. In seven-eighths of reported cases there has been a history of colic and jaundice. Rapid emaciation, with or without jaundice, and the development of cachexia would point to cancer. Chills and fever are against neoplasm. Jaundice is not present so long as the growth is confined to the gall-bladder; but

when it extends to the ducts the jaundice is intense. Ascites may be caused by extension of the disease to the peritoneum, by pressure on or embolus of the portal vein. Aspiration of the tumor gives important evidence; a clear, mucous fluid or pure bile favors gall-stones; a turbid, albuminous, or blood-stained fluid indicates neoplasm. An empyema of the gall-bladder may exist without chill and fever, indicating that the suppurative process has not involved the general bile-passages.

Tumors of the Intestines and other Organs.—Cancer of the intestines occurs most frequently (apart from the rectum) in the cæcum, sigmoid, splenic, and hepatic flexures of the colon. Cancer of the intestines arises in younger subjects than cancer of the stomach. It may be latent, giving rise to no symptoms until there is a development of secondary tumors. Griping, colicky pains are common, associated when there is narrowing of the lumen of the bowel with distention of the abdomen, active peristalsis, and constipation. Diarrhœa, the passage of slime with the fæces, and hemorrhage are frequent symptoms. Cachexia develops progressively but not rapidly, and loss of weight may be slight. Tumors of the sigmoid are most movable, tumors of the cæcum most fixed. The tumor may vary in size, due to the presence of fæces near it. It hardens during contraction, and bubbling of gas through the tumor may be heard. A rolled, thickened omentum may form a definite tumor in the upper portion of the abdomen. A tumor of the pancreas is not always to be felt; it usually causes jaundice from pressure on the common bile-duct. Stearrhœa, glycosuria, and salivation may be present. Cases of cyst of the mesentery, phantom tumor, uterine fibroids, sarcoma of the abdominal wall, tumors of doubtful nature following dysentery, and aneurism of the aorta present interesting points in differential diagnosis.

Movable kidney is a common trouble, particularly in women who have borne children and in neurasthenics of either sex. The condition has been mistaken for a very movable tumor of the pylorus, for dilated gall-bladder, and, in exceptional instances, for the right lobe of the liver. Some cases present no symptoms, others present paroxysms of pain, "Dietl's crises," probably due to a twist of the ureter with retention of urine in the pelvis and calyces. These crises are so severe as to simulate peritonitis. A tumor developing with colicky pain in the renal region, and disappearing in a few days, with an increased flow of urine, is probably an intermittent hydronephrosis. A large proportion of these cases are in women who have borne children, and are associated with enteroptosis and neurasthenic symptoms. Cases of intermittent hydronephrosis are divided into those with obscure cause, those due to lesions of the bladder or lower extremity of the ureter, and those due to lesions of the upper extremity of the ureter. The causes of this condition are calculus, blood-clots, tuberculous lesions, spasm of the ureter, tumor of the bladder near the orifice of the ureter, and cancer of the uterus and vagina. The condition may be transient. Danger lies in the liability to permanent hydronephrosis and infection with pyogenic

organisms. If the attacks are severe, nephrorrhaphy should be urged. Malignant disease of the kidneys frequently occurs in children, and is the most common cause of abdominal tumor in childhood, sarcoma of the retro-peritoneal glands being next in frequency. In a tumor of the flank a systematic and repeated examination of the urine should be made. The aspirator needle and catheterization of the ureters give important evidence. A large tumor of the kidney may be due to tuberculosis of the organ. In a case of this kind the tubercle-bacillus will be found in the pus, and catheterization of the ureters will again give important evidence. Tuberculosis of the kidney is to be distinguished from cystitis.

In the series of cases exploratory incision was frequently practised, confirming the diagnosis and prognosis. In no case were the chances of the patient damaged by the operation.

Subnormal Temperature in the Human Body. (*Deutsches Archiv für klinische Medicin*, 1894, vol. liii., Nos. 3 and 4.) By V. Janssen, M.D., of Kiel.

Subnormal temperatures are considered to be more frequent than was formerly supposed. The histories of the Medical Clinic of Kiel have been searched for the past fourteen years, with the result that over four hundred cases of subnormal temperature were discovered. It is the custom in this hospital to take the temperature of a patient free from fever between six and seven in the morning, and in the evening between five and six, while the usual rule is to take the temperature of fever patients every two hours. The thermometers were tested every three months, and the temperatures were uniformly taken in the rectum. From experimentation upon two hundred patients suffering from skin and venereal diseases, but without fever, the average minimum subnormal temperature was found to be 36.6° C. between six and seven o'clock in the morning and 36.5° C. during the hours of five and six in the evening. A temperature below 36.5° must therefore be considered as subnormal. A number of interesting cases are cited belonging to the following classes: 1. Subnormal temperature after direct deprivation of heat. A drunken man, aged twenty, fell into the water in winter. On removal his temperature was found to be 32.3° C., which quickly returned to normal. 2. After severe loss of bodily fluids, as in severe diarrhœa. 3. In chronic anæmia, cachexias, and conditions of inanition. Of one hundred and thirty cases of uncomplicated carcinoma, fifty-four showed subnormal temperatures. 4. By severe disturbances of circulation, as in a case of mitral stenosis and anasarca, in which for twelve days there was a subnormal temperature. 5. By various diseases of the central nervous system. Numerous cases are here cited. 6. After irritation of the sensory nerves; also in neuroses of a vaso-motor origin, as after wounds, gall and renal colic, etc. 7. By wide-spread lesions of the skin, as in scleroma and extensive areas of burning. 8. In feverish patients, both during the course of the fever and in the stage of

defervescence of the fever. 9. In the action of certain poisons, including in this class some poisons which may be produced in the body itself. An old man took sulphuric acid with suicidal intent, and then threw himself into water at a temperature of 37° C. The temperature was found to be 31° C., and was undoubtedly largely due to the action of the acid.

A reduction in temperature under 33° is not remarkable, as thought by Wunderlich. The signification of a marked subnormal temperature is not, therefore, necessarily ominous. A very unfavorable prognosis should be given in cases of cachexia and marasmic conditions when a continuous low temperature is present, as this often precedes a fatal termination.

Alterations of the Cardiac Plexus in Diphtheria. (*Archives de Médecine expérimentale et d'Anatomie pathologique*, July 1, 1894.) By H. Vincent, M.D.

Vincent considers it to be an incontestable fact that the soluble products secreted by the Klebs-Loeffler bacillus are capable of exerting their influence upon the various elements of the body so as to impair them for the uses for which they were intended. Muscles do not, therefore, escape this influence. But the nervous system of the periphery is attacked with predilection, and it is therefore not surprising that the effects of this infectious process should also affect the branches of the cardiac plexus. To this fact is mainly due a veritable paralysis of the heart-muscle, which shows itself clinically by circulatory phenomena, syncope, and the arrest of the organ, and anatomically by the relaxation and extraordinary dilatation of the walls of the viscus. Diphtheritic neuritis of the cardiac plexus has its own individuality, though the painful symptoms which accompany paralysis of the heart may frequently simulate a true angina. The writer considers that the usual medication is futile. But it would seem that much benefit may be obtained by the application of electricity to the nerves of the heart, especially if done at the beginning of the complication.

A Further Report on the Suprarenal Gland and the Causation of Addison's Disease. (*British Medical Journal*, October 6, 1894.) By A. G. Auld, M.D.

The experimental results of Stilling are quoted that the extirpation of one adrenal is followed by compensatory hypertrophy of the other, and that the extirpation of both of the adult organs is followed by hypertrophy of any accessory suprarenals situated in the neighborhood of the sympathetic ganglia. The thyroid gland is said to be an appendage of the respiratory system, and the study of its evolution shows that its ordinary function is concerned in the gaseous interchanges of the blood tissues; "the phenomena following its destruction by disease or experiment being, at the bottom, the disturbance of the gaseous metabolism and malassimilation of the oxygen of the bodily tissues" (Andriezen). The pituitary gland is an appendage of the central nervous system, and, as the same observer points out, is

ordinarily engaged in providing the secretion carried by the oxygen-bearing water which passes through its duct to the central nervous system, while its destruction is followed by a nutritional failure in the nerve-centres. Of the suprarenal gland it may, in like manner, be said that it is an appendage of the renal-vascular system, being at the same time also in intimate connection with portions of the nervous system. Its functions, so far as the present investigation indicates, are (1) the destruction of certain effete products of metabolism, which are of the nature of a ptomaïne, and (2) the elaboration of a secretion which is absolutely essential to the blood (hæmopoietic). Its destruction is followed by auto-intoxication and a profound alteration in the chemistry of the blood, which entails, among other things, degeneration or nutritional changes in the nervous and digestive systems, and derangement of the color-regulating metabolism.

Tubbing Made Easy in Typhoid. (*Chicago Medical Recorder*, October, 1894.) By Albert H. Burr, M.D., of Chicago.

The greatest benefits produced by the application of cold water in typhoid by the Brand method are not due to reduction of temperature, but arise from the increase of the elimination of toxic products through the excretory organs, thus limiting their power to depress the vital force of the nervous system. The cold water acts as a powerful stimulant to the central nervous system through the sensory reflexes of the cutaneous surface, and through the respiratory centres deep reflex inhalations are stimulated, which are of great importance in oxygenating the blood and sending it with increased force to all the organs of the body and so re-enforcing their functional activity. According to the experiments of Roque and Weil, the toxicity of the urine of patients treated by the antipyretic coal-tar compounds is about the same as, or even less than, that of normal urine. This toxicity is increased twofold by the expectant plan of treatment and sixfold by the Brand baths. The author mentions the obstacles which prevent the use of this treatment, and then describes a folding mattress bath-tub of his own construction which he believes will remove all objections. It consists of a folding crib-like frame of poplar six feet two inches long by two feet wide and eight inches deep; along the outside of the lower rail are fastenings for holding rings, which are attached to the edges of a rubber sheet two and a half yards long by one and a quarter yards wide. The rubber sheet is slipped under the patient and drawn up over his pillow, and its edges tucked up alongside his body. The crib frame is then unfolded and placed over the patient, resting upon the mattress and surrounding the patient, pillow, and rubber sheet. The edges of the sheet are then drawn up over the top rail of the crib and down the outside, and the rings hooked into the fasteners. In this light and perfect tub the patient rests undisturbed on his comfortable mattress and pillow. The tub is filled by siphoning water from elevated buckets, and, after the bath, is emptied by siphoning into buckets on the floor. By means of this simple, inexpensive tub a bath can be readily

modified in various ways without exhausting the patient, and no strain in lifting is required of the attendant. The author hopes that this device will make the Brand treatment more popular and will extend its good offices in the saving of human lives.

A Case of Actinomycosis. (*Chicago Medical Recorder*, October, 1894.) By E. Lyman Brown, M.D., of Chicago.

This case of actinomycosis occurred in a man who had been working in a machine-shop for the past three years, and had never lived on a farm or had anything to do with animals. No raw meat had been eaten, but the patient says that he always took bologna sausage for his noon lunch. A severe lancinating pain began in a decayed tooth and soon spread over the side of the head. This was followed by a swelling situated about one-half inch below the angle of the mouth, which soon became the size of half an egg. In a week from the onset he took to his bed. A poultice was applied to the tumor until the abscess opened externally and considerable pus was discharged. Ten days later a second and soon after a third tumor appeared. When the writer first saw him these two had been poulticed and were evidently filled with pus, but had not opened. They were surrounded by a reddened, indurated area, and the pain and difficulty in swallowing showed that the tongue and the pharynx were also swollen.

From the location, the absence of pain and of lymphatic enlargement, the author believed it to be a case of actinomycosis, and his diagnosis was confirmed by Dr. S. P. Black, who found yellowish-gray granules which showed under the microscope the radiated structure of the ray fungus.

The abscesses were opened and washed out daily for a week with peroxide of hydrogen and perchloride of mercury, and ten to fifteen grains of iodide of potassium were given internally. In a week he was able to walk about, and in two weeks after beginning treatment went to his work. The area of induration gradually disappeared, and the patient gained in flesh and strength as soon as the difficulty in eating had been overcome. The author attributes his improvement to the iodide of potassium treatment.

Nature, Diagnosis, and Treatment of Pernicious Anæmia. (*Therapeutic Gazette*, June 15, 1894.) By Alfred Stengel, M.D., of Philadelphia.

The writer, in discussing the nature of pernicious anæmia, distinguishes four groups of cases, (1) those due to gastro-intestinal lesions, (2) those due to intestinal parasites, (3) those occurring during pregnancy and the puerperal state, and (4) the apparently causeless cases. On studying the blood and the organs, he concludes that the evidences of hæmolytic change are strong enough to warrant the belief that this is the important causal element of the disease, though deficient hæmogenesis is a contributing cause. Cases of long-standing gastric disease, finally terminating in pernicious anæmia, are regarded as proof of the assumption that the pernicious type of anæmia is not assumed until the hæmogenetic function fails. The same

thought is applied in cases of chlorosis becoming pernicious anæmia. As to the diagnosis, he would designate as pernicious anæmia cases in which, with suspicious clinical features, the blood-count sinks below 1,500,000, in which the hæmoglobin shows less, or at least not greater, reduction, and in which marked poikilocytes and large nucleated red corpuscles (megalocytes) are found. Cases presenting these features he would call pernicious anæmia whether a distinct cause were apparent or not. The treatment of the disease requires the most careful regulation of diet and hygienic conditions, as well as the use of arsenic, given continuously in rather large doses, beginning with two drops of Fowler's solution and increasing to fifteen drops. Iron is useful during convalescence, rarely in the early stages. In cases of relapsing pernicious anæmia, the relapses he regards as resulting from too early withdrawal of arsenic. Care of the stomach by bitters, lavage, and dietary precautions, intestinal antiseptics and lavage, and, in pronounced cases, general massage are recommended in suitable cases.

Influence of Erysipelas on Cholera. (*Meditzinskoie Obozrenie*, 1894, No. 15.) By N. A. Blagoveshtchensky.

The observations of this author cover four consecutive cases of cholera in which recovery took place after the complication of erysipelas had occurred. The clinical aspects of the cholera were then abruptly changed, the diarrhœa and cramp immediately ceasing. The writer believes that: 1. The erysipeloid process shortens the course of Asiatic cholera, the subnormal temperature of the latter disease at once giving place to a high febrile one peculiar to erysipelas. 2. Anuria disappears on the second or third day of the complication, while apathy even vanishes within twenty-four hours, the general condition, sleep, and appetite steadily improving.—*British Medical Journal*, October 6, 1894.

THERAPEUTICS.

IN CHARGE OF ALEXANDER D. BLACKADER, B.A., M.D.,
Professor of Therapeutics, McGill University, Montreal, Canada.
ASSISTED BY
D. I. EVANS, M.D.

The Treatment of Diphtheria. (*Medical Record*, November 3, 1894.) By A. Campbell White, M.D.

In this paper the writer gives us the result of his experience in the Willard Parker Hospital, with three different modes of local treatment. In the first series, the nasal and throat cavities were thoroughly irrigated every one to three hours with warm salt solution, until the pseudo-membrane had disappeared, then less frequently till the entire disappearance of the bacilli. In the second series, in addition to the above treatment, a spray

of peroxide of hydrogen of varying strengths was also applied to the throat and nares every three hours, except during the night. In the third series, a solution of bichloride of mercury was substituted for the salt-water solution of the first series. The nasal cavities were irrigated every eight hours with a warmed 1 to 4000 solution, and the throat every three hours with a 1 to 3000 solution. Besides this local treatment, nearly all the cases received frequent doses by the mouth of the tincture of the chloride of iron, and of alcoholic stimulants. The conclusions arrived at from the results obtained in these cases, together with the investigation and observation of a much larger number of cases, may be stated as follows:

1. Frequent washing of the air-passages attacked by diphtheria lessens the duration and amount of the diphtheritic membrane.

2. The addition of antiseptics, in sufficient strength to be germicidal, to the irrigating fluid is irritating to the mucous membrane, thereby causing extension and persistence of false membrane rather than the effect desired.

3. The addition of antiseptics to the irrigating fluid is also liable to cause systemic poisoning.

4. Spraying the throat (also the pernicious treatment of swabbing the throat), whatever solution is used, can have no good effect, as the parts reached by the spray, except in the hands of an expert, must necessarily be very limited. In very young children the spray cannot be used at all with advantage.

Frequent cleansing of the throat and nasal cavities with a bland solution, such as plain warm water, or normal salt solution, is easier of application, more agreeable to the patient, and does all that any antiseptic solution can accomplish, either upon the duration of the membrane or the period of the isolation.

On Diuretin. (*Zeitschrift für klinische Medicin*, 1894, vol. xxiv., 3 and 4.) Panowski has carried out, in fifty cases, a careful investigation on the action of diuretin, to determine whether its effects were due to increased renal activity or increase of arterial pressure. He finds that a distinct tonic action is exerted on the cardiac muscle, somewhat resembling that of caffeine, but inferior to that of digitalis, and that to the increased blood-pressure, owing in part also to stimulation of the nerve-centre, its marked diuretic action is due. He thinks it will prove of more value in dropsy arising from affections of the cardiac valves or muscle than in affections of the kidney. The drug is best given in powders of fifteen grains four or six times a day. The diuretic action will be noticeable between the second and sixth day.

On the Treatment of Rheumatism. (*Centralb. für die Gesammt. Therapie*, October, 1894.) By E. Moritz, M.D.

The writer states that he has carried out the following treatment with marked success. The patient is put into a hot bath (38°–41 °C.) for twenty

minutes. On coming out he is wrapped in a sheet, put to bed, and covered with three or four warm blankets. A dose of fifteen grains of the salicylate of sodium is then administered, followed by a copious draught of hot lemonade or punch. Free diaphoresis takes place in from fifteen to thirty minutes. The patient is left in the pack about an hour, then in turn each of the limbs, and finally the body is uncovered, rubbed over quickly with a cloth wrung out of cold water, and dried, using plenty of friction. A dry gown is then put on the patient, and he is placed in a warm bed. This treatment is best carried out in the morning. At night a second dose of the salicylate, followed by a warm drink, is to be given. In from three to five days, under this treatment, the patient can usually leave the bed and walk about.

The Effect of Thyroid Feeding on Some Types of Insanity. (*Lancet*, October 13, 1894.) By S. R. Macphail, M.D., and Lewis C. Bruce, M.D.

In this very interesting paper the writers state that in patients with long-standing insanity, psychologists have noticed mental improvement and frequent recovery after attacks of erysipelas, the exanthemata, and inflammations generally, and that, as the thyroid extract appeared to have the power of producing a mild feverish condition, which could be modified at will by the physician, they considered that it might be possible by its means to simulate nature's method of cure. In this paper they give the results of their observations on thirty patients on whom they tried this means of treatment in the Derby Borough Asylum. The patients were weighed, put to bed, and frequent and careful observations made before, during, and after the administration of the thyroid extract. The forms of mental disease treated included cases of mania, melancholia, general paralysis, alcoholic amnesia, delusional insanity, and puerperal and lactational insanity. None of the patients were myxœdemic, and none were subjected to this means of treatment until other means had failed. Of the ten males thus treated, one recovered, five were relieved, and four were not improved. Of the twenty females, thirteen recovered, two were relieved, and five were not improved. The writers consider the use of the extract as contraindicated in cases where there is rapid loss of body weight with malassimilation of food, but think that under proper precautions thyroid extract is a valuable addition to our armamentarium in the treatment of certain cases of insanity, and that their observations fully justified their anticipations that the production of a true febrile condition, with its resulting reaction, would prove of benefit in some cases.

Compression of the Common Carotid Arteries for Uræmic Convulsions. (*Lancet*, August 25, 1894.) By V. Lindsay, M.D.

The writer relates the case of a boy four years of age undergoing treatment for acute nephritis. Uræmic convulsions suddenly supervened and, in spite of the use of ice to the head and of pilocarpine, became general.

While at their height he made firm pressure with his fingers, compressing the vessels against the tubercles of the sixth cervical vertebra, and in less than a minute there was a cessation of the convulsions. After gradually relaxing pressure, there was no return of the spasms for three or four minutes, and, on their return, pressure again almost immediately checked them. Six times this was repeated, the period of rest gradually lengthening until, after waiting three-quarters of an hour without any return, the patient was left in charge of his father. He remained in a state of coma, breathing quietly for eight hours, waking with a start, perfectly conscious. His subsequent progress was very satisfactory.

The Modern Treatment of Pulmonary Phthisis. (*Lancet*, November 3, 1894.) By C. Theodore Williams, M.D.

In reviewing the treatment of phthisis during the past eighty years, the writer emphasizes the fact that whatever success has been obtained has been achieved by strengthening and fortifying treatment, whether by diet, climate, or medicines, and not by so-called specific treatment. All these specific modes ignore the greatest factor of all, the resisting power of the organism to disease, and it is to this that the physician should lend his aid and support. Life in the pure air, judicious exercise, and a light, nourishing dietary, with such aids as cod-liver oil and tonics, have effected more than all the forms of bacillicide treatment. The brilliant researches of Metchnikoff have acquainted us with some of the powerful weapons with which nature fights the battle of resistance to such bacillary invaders, and the problem of treatment would appear to resolve itself principally into means to increase the number and activity of the phagocytes. Dr. Williams thinks experience teaches us that a large quantity of oleaginous food, supplied under conditions which promote its absorption and assimilation, is one of our surest methods of promoting the formation of lymph and of blood rich in phagocytes. He has little faith in the substitutes for cod-liver oil, although he has given a fair trial to most of them. The introduction into the dietary of a large amount of milk is to be aimed at. If cow's milk fails, ass's and goat's milk, which are more easily assimilable, should be tried. Mere gain in weight, however, is not of great significance, and is by no means incompatible with the progress of the disease; all it signifies is maintenance of appetite and the avoidance of much exertion. A most important factor in treatment is pure air, and success is largely dependent upon its thorough application to the system of the patient. Williams recommends an out-door life, and that phthisical patients should accustom themselves to open windows throughout the year. The recumbent posture is not the best for expectoration and increases risk of fresh infection. He recommends in preference a position in which the head and shoulders are more or less raised. In cases of consolidation, or of excavation, with pyrexia, exercise is undesirable, but in cases of limited apical lesions and limited cavities without fever, it is desirable for the patient to take as much exercise as his strength will permit.

SURGERY.

IN CHARGE OF HENRY R. WHARTON, M.D.,

Demonstrator of Surgery and Lecturer on Surgical Diseases of Children in the University of Pennsylvania; Surgeon to the Presbyterian Hospital, the Methodist Episcopal Hospital, and the Children's Hospital; Consulting Surgeon to the Presbyterian Orphanage.

AND

JOSEPH P. TUNIS, A.B., M.D.,

Assistant Demonstrator of Surgery in the University of Pennsylvania; Surgeon to the Dispensaries of the Presbyterian, Methodist Episcopal, and Children's Hospitals.

Thirteen Cases of White Swelling of the Knee in Young Adults. (*Boston Medical and Surgical Journal*, August 2, 1894.) By Charles L. Scudder, M.D., of Boston.

These cases represent a group of young adults operated on in the Massachusetts General Hospital prior to May, 1891. Ten of the thirteen were fifteen years old or over, the oldest being thirty-one years of age. Two were aged thirteen and fourteen years respectively, and the age of one was not obtained. In every case a complete excision was done, the patella being removed by a curved incision, transverse to the long axis of the leg, carried through the ligamentum patellæ. Drainage was provided at each end of the incision. In a small number of cases the bone was partially immobilized by means of silver-wire sutures or steel nails, and in all the cases the leg was immobilized externally from the toes to the hip by a plaster-of-Paris or posterior wire splint, for a period of not less than four to six months. All of the patients, with the exception of one, have been under observation from one to six years subsequent to the operation. A useful leg has resulted in each case, and in all but one union has been firm. The shortening in the cases measured has been from one-half to three inches. The limp is slight.

In considering the most important factors in the operation for excision, the author speaks of the necessity of internal fixation, which is best secured by accurate approximation of the tibia and femur fixed by metallic sutures. The most satisfactory method of operating is by the transverse incision through the ligamentum patellæ, as it affords a more thorough exposure of all the joint surfaces than any of the other incisions used. A rigid external support is necessary for at least a year or more.

The Cure of Carcinoma of the Breast by Radical Operation; Observations in One Hundred and Eighteen Cases. (*Medical Record*, August 25, 1894.) By William T. Bull, M.D., of New York City.

In the following series of cases the diagnosis has been confirmed by microscopical examination in every instance except one, and only three of the patients have been lost sight of. All of the cases are not available as contributing to the question of cure, because not all the operations have been complete or radical in character. Ten incomplete operations were per-

formed, the breast only being removed. These were all followed by recovery. One hundred and eight complete operations, in which the breast was excised together with a liberal amount of the skin over it, the fascia of the pectoral muscle, and the glands of the axilla, included four fatal results. This gives a mortality percentage of 3.6 per cent.

The author, in determining the proportion of cures, has accepted the three-year limit as evidence of cure, and deducts the thirty cases that were operated on subsequent to 1891, with the three cases lost sight of. Of the remaining eighty-five cases, sixteen were alive and in good health on January 1, 1894, and have lived on an average six years and a few days since the operation. This gives a recovery percentage of 26.6 per cent., which is a greater proportion of cures than has been previously reported.

The ten patients in whom only the breast was removed all died of cancer at the end of an average period of thirty-four and one-half months. The author feels convinced that the incomplete operation is utterly inadequate, and should not be performed except as a preventive measure or for the relief of local symptoms. The complete operation should be done in every case of cancer, whether the glands of the axilla are felt to be enlarged or not. The writer regards it of great importance to remove the parts in one solid mass from the inner periphery of the breast to the apex of the axilla. By this method the parts most likely to be affected by recurrence—the skin and pectoral fascia, the axillary glands, and the lymphatics of that region—are removed.

The following data show that the complete operation is capable of effecting a cure even when the glands are involved. Of the twenty cured cases, the breast and glands were involved in eight. Of the entire number,—eighty-five cases,—the breast and glands were both affected in forty-six, the breast alone in twenty-two, and the condition was not noted in seventeen. Of the twenty-two cases, twelve, or fifty-four per cent., were cured, and ten, or forty-five per cent., died of recurrence. Of the forty-six cases, eight, or seventeen per cent., were cured, and thirty-eight, or eighty-two per cent., died of operation, or a recurrence, or are living with recurrence. By this method, expectation of cure may be held for at least one-half the cases of cancer, if applied before the axilla is invaded. Operation is indicated in the earliest stages of the disease, and a positive diagnosis should be made in all cases of tumor of the breast by means of needle exploration or incision. When the operation fails to cure, it prolongs life and regulates the course of the disease so as to make it more bearable. Secondary operations are often advisable as palliative measures, and should be performed when the nodules are small and free from adhesions. The risk of the complete operation is slight, and it is followed by no undesirable after-effects.

Surgery of the Ureter. (*Annals of Surgery,* September, 1894.) By Christian Fenger, M.D., of Chicago.

The conclusions of this author are: Accidental wounds and subcuta-

neous ruptures of the ureter have not as yet been objects of direct surgical procedure upon the ureter at the seat of lesion. It will be advisable, however, when and as soon as the diagnosis can be made, or when lumbar opening of a peri-ureteral cavity containing extravasated urine is made, to look for the seat of rupture, and, if practicable, to restore the continuity of the canal. Catheterization of the ureters from the bladder for purposes of diagnosis of diseases of the kidneys has given valuable information affecting the decision for or against operation on the kidney. The procedure is reasonably practicable in the female by the methods developed by Simon, Pawlik, and Kelly. In man, catheterization is practicable only through epicystotomy. The danger of this operation is steadily decreasing. The old mortality, which varied from twenty-seven to twenty per cent., has been reduced in the more recent series of operations (Ultzmann). Albert has had twenty cases with one death; Assandelft, one hundred and two cases with two deaths; Ultzmann, nine cases with one death; Bergman, ten cases; Von Itersen, twelve cases; Trendelenburg, six cases; and Antal, eight cases,—all without a death. Therefore, this procedure is justifiable in selected cases. Catheterization of the ureter from the bladder, as a curative measure for the evacuation of hydro- or pyonephrosis, has occasionally been performed successfully (Pawlik). It is more difficult and more uncertain than nephrotomy and the attempt to find and remedy the stenosis of the ureter from the pelvis of the kidney.

Dilatation of strictures of the female ureter by elastic bougies or catheters has been tried from the bladder by Kelly with temporary success, and from the pelvis of the kidney by Alsberg successfully. Consequently this procedure is of use in isolated cases. Permanent catheterization of the ureter from the bladder, a fistula, or an implanted ureter is often tolerated only for a limited time, and must be employed with caution for fear of causing ureteritis. Uretero-lithotomy, longitudinal incision over a stone for its removal, is a safe operation by the extraperitoneal method. The wound heals without stenosis. In extraperitoneal operations suturing is unnecessary. Drainage down to the wound is sufficient. Intraperitoneal ureterotomy should be done only when access outside of the peritoneal cavity is impossible, and should be completed by careful suturing, covering with a peritoneal or omental flap, and drainage.

Opening of the peritoneal cavity to locate the seat of the stone may occasionally be necessary, but when the diagnosis is once made, ureterotomy for the removal of the stone should be done through an extraperitoneal incision, and the abdomen closed. In valve-formation or stricture of the ureter, causing pyo- or hydronephrosis, or a permanent renal fistula, nephrotomy should be followed by exploration of the ureter in its entire course from the kidney to the bladder. Exploration of the ureter as to its permeability should be done from the renal wound by a long, flexible silver probe—a uterine probe—or an elastic bougie, either olive-pointed or not. If the bougie passes into the bladder, the examination is at an end.

The size of bougie that will pass through a healthy ureter is from nine to twelve, French scale. If the pelvic orifice of the ureter cannot be found from the renal wound, it should be sought for by opening the pelvis, pyelotomy, or by incising the ureter, ureterotomy. A longitudinal incision, half an inch to an inch long, in the posterior wall of the pelvis, can be made while the kidney is lifted upon and against the twelfth rib. This procedure is easy if the pelvis is dilated, but may be impossible if the pelvis is of normal size.

Operation for valve-formation should be done through the wound in the pelvis. If the opening cannot be seen or found from the pelvis, ureterotomy should be performed immediately below the pelvis, a small incision should be made in the ureter, and a probe passed up into the pelvis. The valve should be split longitudinally, and the incised borders so treated as to prevent reformation of the valve.

A stricture in the ureter, if not too extensive, can be treated by a plastic operation on the plan of the Heinecke-Mikulicz operation for stenosis of the pylorus,—namely, longitudinal division of the stricture and transverse union of the longitudinal wound. This method of operating for ureteral stricture seems to me preferable to resection of the strictured part of the ureter (Küster's operation) for the following reason: It is a more economical operation, and preferable when the elongation of the ureter is not sufficient to permit the two cut ends of the ureter, after excision of the stricture, not only to come in contact, but even to permit of closure by invagination without stretching. Resection of the upper end of the ureter and implantation of the distal end into the pelvis may be useful in rupture or division, or stricture of the upper end of the ureter, as described by Küster. In a similar case of stricture of the upper end of the ureter, especially if the ureter were not elongated or the kidney movable, the author prefers the plastic operation proposed by him, as it is easier of technique, and as it proved successful in one of his cases of traumatic stricture in the ureter below the pelvic orifice.

The ureter is accessible through an extraperitoneal incision, a continuation of the oblique incision for lumbar nephrotomy, from the twelfth rib down along and one inch anterior to the ilium and along Poupart's ligament to about its middle. This incision gives access to the upper three-fourths of the ureter and down to within two to three inches above the bladder. The vesical and lower pelvic portions of the ureter may be reached, as Cabot has pointed out, by means of the sacral operation, or Kraske's method modified by osteoplastic temporary resection of the sacrum. In woman, the vesical portion of the ureter is accessible through the vagina. The vesical orifice of the ureter may be reached from within the bladder by suprapubic cystotomy in man, or by dilatation of the urethra, suprapubic or vaginal cystotomy in woman.

Uretero-uterine fistulas can be treated satisfactorily by plastic closure of the vagina or by nephrectomy. Implantation of the ureter into the bladder

is, under favorable circumstances, the operation of the future for this condition. Uretero-vaginal fistulas and congenital urethral or vaginal terminations of the ureter should be treated by vaginal plastic operation for displacement of the proximal end of the ureter into the bladder. If these attempts fail, and the kidney is not infected, extra- or transperitoneal implantation into the bladder should be done, and finally, as a last resort, nephrectomy.

Complete transverse wounds in the continuity of the ureter should be treated by uretero-ureterostomy, after Van Hook's method of lateral implantation, if possible. Complete transverse wounds of the upper end of the ureter should be treated by implantation of the ureter into the pelvis of the kidney, as devised by Küster. Complete transverse wounds of the ureter near the bladder should be treated by implantation into that viscus either by splitting the ureter or by invagination. Loss of substance of the ureter too extensive to permit of uretero-ureterostomy, or too high up to permit of implantation into the bladder, may be treated by implantation on the skin or into the bowel. Implantation into the bowel is objectionable on account of the infection which is almost certain to follow sooner or later. Implantation on the skin in the lumbar region or the abdominal wall may have to be followed by secondary nephrectomy, which, however, is much less dangerous than the primary operation. Implantation into the rectum should not be resorted to when implantation into the bladder is possible.

Landerer's Method of Treating Fractures. (*Lancet*, October 27, 1894.) By Joseph Lumniczer, M.D.

In the Second Surgical Clinic, Budapesth, from 1880 to 1891, five hundred and fifty-two simple fractures were observed, from which the following data were obtained. To fix the time of healing of a fracture two dates can be taken as follows: 1. The time when the callus between the ends of the broken bone has fully developed, so that no abnormal mobility can be detected. 2. The time when functional activity of the limb is restored. The return of functional activity is the surest test of the time required for the healing of a fracture. In general, the time required for the complete return of functional activity after the bones had joined formed from one-third to two-thirds of the time occupied in the junction of the fragments.

In the cases observed, the longest time for union was in a case of fracture of the femur, fifty-seven days; and the shortest in a fracture of the metatarsus, twenty-three days, and clavicle, twenty-four days; in the forearm and fibula, thirty-five days; in the tibia, thirty-nine days; and in the patella, fifty-two days,—chiefly fibrous union. After the union of the bones a further period was needed,—namely, for the patella, eighty-three days; femur, eighty-one days; the humerus and tibia, sixty-two days; the fibula, fifty-nine days; the ulna and clavicle, thirty-nine days. The average further period required for active mobility amounted in the forearm to only one-half the time needed for union of the bones,—namely, fifteen to thirty-

two days; elsewhere it takes about two-thirds,—viz., in the case of the clavicle, radius, and ulna, from fifteen to seventeen days; in the humerus and femur, twenty-eight to thirty days. With a slight inaccuracy, we can obtain the time of commencement of functional mobility if we add to the time required for consolidation, fifteen days for the clavicle and bones of the forearm, and thirty days for the humerus and bones of the lower extremities.

According to Landerer's method: 1. The ends of the bone are to be replaced immediately after the fracture and fixed in a firm dressing, such as plaster of Plaster, until the disappearance of swelling due to the injury. 2. When the provisional callus is fully formed, which takes from eight to fourteen days, the callus and surrounding muscles are to be massaged twice daily, at first gently, and the mobility of neighboring joints to be kept up by active and passive movements. In ninety-three cases thus treated, eighty-nine of which were simple and four compound fractures, the results may be summarized as follows: Fixation of the bones took place in from twelve to thirty-six days, the shortest time being twelve days for the clavicle and the longest fifty-seven days for the femur. The time between consolidation and functional activity was generally not more than ten days, with the exceptions of the femur, fifteen days, and the bones of the forearm, thirteen days. For consolidation under the old treatment from twenty-four to fifty-seven days were required, while in the case just referred to it took from twelve to thirty-six days. A return of functional activity required by the old plan from thirty-nine to eighty-three days. In Landerer's method it was attained in from fourteen to fifty-one days. The method thus effects a saving of time of one-third for consolidation and one-third for mobility.

This treatment is not recommended in comminuted fractures or where there is very great tendency to displacements of the ends of the bones.

OBSTETRICS AND GYNÆCOLOGY.

IN CHARGE OF RICHARD C. NORRIS, M.D.,

Lecturer on Clinical and Operative Obstetrics in the University of Pennsylvania; Physician-in-charge, Preston Retreat; Consulting Obstetrician and Attending Gynæcologist, Southeastern Dispensary and Hospital for Women and Children.

On the Causation of the Sacculated Pregnant Uterus. (*Edinburgh Medical Journal*, October, 1894.) By J. Halliday Croons, M.D.

Four cases of this rare condition are narrated. In the first case a large pediculated ovarian tumor had a hard projection on its lower edge which pressed over the brim of the pelvis, deeply indenting and dividing the pregnant uterus into an upper and a lower half. The lower segment contained the head and the upper the trunk and extremities. There were no

auscultatory sounds, menstruation had been suppressed for over a year, and no trace of a cervix uteri could be found. A sessile ovarian tumor was diagnosed. The cause producing the sacculated condition was the growth of the projection on the tumor *pari passu* with the development of pregnancy.

In the second case the woman had suffered with a large pelvic abscess which pointed through the vaginal roof. It was drained and she recovered. Seven months later, when labor came on, no os could be found until an anæsthetic was given, when the cervix was found very high, fixed, and indurated. The abdomen was opened, and a dead child was extracted. In the second week a peritonitis came on, and the patient died later of pneumonia. In a somewhat similar case reported by Dr. Reid, of Glasgow, he attributed the displacement to adhesions consequent upon an old pelvic inflammation.

In the third case a large tumor, irregular in shape, nearly filled the abdomen and vagina. No cervix uteri could be found, and no auscultatory sounds, except a very faint souffle, and, as the patient had had irregular hemorrhages, a sessile ovarian tumor was diagnosed. On opening the abdomen a sacculated pregnant uterus was found. The cause of the sacculation in this case was a fibroid tumor in the anterior uterine wall, which, by impinging on the brim of the pelvis, had prevented the lower uterine segment from rising. This was gently freed, and four days after the woman was delivered with the greatest ease.

The fourth case simulated a sacculated uterus. A large tumor reached to the umbilicus and filled the vagina. On the left the tumor was hard and nodular, but on the right it was quite soft, and a uterine souffle and fœtal heart could be detected. This appeared to be a pregnant uterus with fibroids. Cæsarean section was made and an extra-uterine pregnancy was found.

To differentiate a sacculated uterus from a sessile ovarian tumor is almost impossible if the auscultatory sounds are wanting. The abdominal portion of the uterus is more fixed than usual, and is more or less deflected to one or the other side.

Nothing New. (*Nederlandsch-Tydsch. u. Vevlosk. u. Gyn.*, vol. v., No. 1.)—Geyl mentions a case of extra-uterine pregnancy which was successfully operated upon towards the close of the seventeenth century by A. Cyprianus, professor at the Dutch University of Franeker, in which he employed the idea of elevated pelvis which Trendelenburg has lately brought into such well-deserved prominence. Cyprianus says, "*Qui etiam in morem cautelam, ne intestina delaberentur, aegram ita collocaveram, ut superiores corporis partes aliquantulam essent depressæ; imo in eodem hoc fere situ permansit muliercula, donec prosus convalesceret, ad vitandam scilicet herniam ventralem.*" [Even just in accordance with custom, lest the intestines should descend, I so placed the sick woman that the upper part of the body should be lowered to some degree; the girl remained in nearly the

same low position while she steadily convalesced, without doubt preventing a ventral hernia.]—*Archives of Gynæcology, Obstetrics, and Pediatrics*, October, 1894.

Coincident Intra-Uterine and Extra-Uterine Pregnancy. (*Medical News*, March 31, 1894.) By Barton Cooke Hirst, M.D., of Philadelphia.

The patient had induced abortion by passing a rubber catheter and its steel stylet into the uterus. Profuse hemorrhage followed, and a few hours later the fœtus was discharged. Four weeks afterwards the writer saw her for the first time. He found a temperature of 103° F., a rapid, feeble pulse, and severe abdominal pains. By vaginal examination, large, tender masses were felt behind and to the right side of the uterus. Supposing the condition to be due to septic infection, the abdomen was opened. Old clots and black blood welled out, and a gestation sac of six to eight weeks' development was found in the right tube. No embryo was found, but the chorial villi were so well developed that there was no mistaking the character of the mass in the tube. The symptoms of extra-uterine pregnancy were completely masked by the abortion.

Successful Ovariotomy on a Patient in Her Eighty-Seventh Year. (*Australasian Medical Gazette*, September 15, 1894.) By E. Matthews Owens, M.R.C.S.E., of Brisbane.

The author reports a case of oöphorectomy for a fibro-cystic tumor of the ovary, performed on a patient in her eighty-seventh year. The woman had been operated upon for a parovarian cyst seven years previously. The cyst of the ovary had developed on the side from which the parovarian cyst had been removed. The patient made a recovery, complicated only by a slight attack of cystitis. This is the oldest oöphorectomy on record.

NEUROLOGY.

IN CHARGE OF LANDON CARTER GRAY, M.D.,
New York City.

GUY HINSDALE, M.D., Philadelphia. AND WILLIAM BROADDUS PRITCHARD, M.D., New York City.

The Study of a Case of Amnesia or "Double Consciousness." (*Psychological Review*, November, 1894.) By Professor Charles L. Dana, M.D., of New York City.

The writer considers the following case of altered personality to be of special psychological interest. It is classical in type and was not accompanied by hysteria, epilepsy, or organic disease.

The patient, Mr. S., aged twenty-four, had always been healthy, and was an active, intelligent young man. On Friday evening, November 18, he retired as usual, but the next morning did not appear at breakfast, and was found lying unconscious in bed, with a livid face, eyes open, and slow and stertorous respirations. His family physician worked over him three hours before his breathing became natural. During the succeeding six days his mind wandered, and he was distressed and excited. On the eighth day he was taken to a sanitarium, slept that night, and awoke the next morning free from mania. From this time the evidences of amnesia and changed personality were apparent. His memory of his past life was entirely gone. He could only understand language of the simplest character, but his vocabulary rapidly increased, for he at once remembered, and never forgot, a name if once told it. He did not understand the uses of things, such as the various articles about the house, and the qualities and uses of the horse and cow; yet he was always neat and preserved the courtesies and amenities of a gentleman. He did not recognize parents, sisters, or *fiancée*, but said he had always known the latter and desired to have her with him. The meaning of marriage and the significance of the filial relations were alike unknown. He did not even know letters and figures, but soon learned to read and write simple sentences. He sang and played old songs, but did not associate them with any early memory.

In argument he showed considerable dialectic skill and logical power. He was even-tempered and obliging, was never in a passion, and never had delusions or hallucinations. His health was good. He had no anæsthesia of the skin, no limitation of visual or aural fields, no stigmata of a trance or hysterical state. There seemed lack of vaso-motor tone, shown by coldness and redness of the extremities. The writer hypnotized him three times, using the methods of Braid and Bernheim combined. On the second and third trials a light degree of hypnotic sleep was induced, and he was told that at a certain signal he would go through certain acts, and that at a certain hour he would remember the past. He did everything that was suggested, but at the time mentioned said, "Dr. Dana told me to remember something, but I can't do it." He remained in much the same state, although his knowledge increased so that he could go about alone. Efforts were made to revive old memories, but without apparent success. On February 15, exactly three months from the time of his attack, he went to see his *fiancée*. He complained, while riding home, that one half of his head was prickling and numb, then the whole head, and he became sleepy and quiet, and on reaching home was taken to bed. At about eleven o'clock he awoke and found his memory restored. He knew his family at once and was plainly the same man as before the accident. The three months following his illness were an entire blank. On going to see the writer the next day, S. did not know him,—he had never seen him before the accident. He resumed his business at once, and has remained perfectly well up to the present time.

In his remarks the writer describes a simple visual sensation as a nervous impulse travelling from the retina to a certain part of the occipital cortex. If the sensation is complex, as in perception of a man, a mass of association-fibres send out their impulses and awaken images of man as previously seen. If it is an old friend, a larger portion of the cortical area is aroused and pleasurable feelings are awakened and memories are revived. Destruction of certain parts of the brain cortex may abolish all memories of a certain class, and leave the intellect otherwise clear; but in this instance all memory-pictures were lost. The cortical centres for seeing and hearing were present, and could be excited to activity; but no sensory stimulation could bring into activity the remoter memory areas. To him man was at first but

little more than a simple visual sensation. The associative tracts which formerly brought quickly into consciousness the patient's previous visual, auditory, and tactile memories of man were paralyzed. These tracts connect the sensory areas with long-stored-up memories, and are put in action by nerve-cells which have a specialized and highly developed function. In the case cited the function of the cell was suspended. From a neurological point of view the patient had, at the very first, complete apraxia, including mind-blindness and word-blindness, mind-deafness and word-deafness, mind-anosmia, ageustia, and amimesis,—a total loss of memory for the significance and uses of things and of language. He recovered from the word-blindness and deafness, but a certain amount of the apraxia bearing upon abstract ideas remained, so that none of the memory-pictures stamped upon his brain by his life-experience previous to his injury could be revived.

The Opium Treatment of Epilepsy. (*Medical Record*, September 22, 1894.) By Joseph Collins, M.D., of New York.

After a critical review of the more recent measures in the treatment of epilepsy, the author gives the result of his treatment of thirty-six cases on the plan introduced by Flechsig about a year ago. It consists in administering opium, in the shape of the extract or pill, in large doses for a period of six weeks. The dose of opium in the beginning is from one-half to one grain, and this is gradually increased until the patient is taking fifteen grains or more per day, in doses of from three to four grains. The maximum dose is reached by the end of the first week. At the end of six weeks the opium is suddenly stopped, and for it bromide of potassium or sodium in doses of one-half drachm four times daily is substituted. After these large doses of bromide have been kept up for some time the dose is gradually decreased until the patient is taking less than two scruples per day. The sudden cessation of administering the opium and the exhibition of the bromide are quite essential.

Twenty of Dr. Collins's cases were under almost daily observation for one year; the remaining sixteen were very old cases, and were observed for four months only. No sinister results accompanied the administration of opium in these large doses; but the most watchful care is enjoined, especially during the first weeks, until the patient becomes accustomed to the treatment.

The most satisfactory results were obtained in chronic epileptics, and particularly those who were not responsive to large quantities of bromide. In epilepsy dependent on, or associated with, gross organic lesion of the brain, the treatment seemed to give better results than the pure idiopathic epilepsy. By gross organic lesion, epilepsy associated with old cerebral hemorrhage and softening and epilepsy associated with defective development are referred to.

Conclusions:

1. The plan suggested by Flechsig is not a specific in the treatment of epilepsy.

2. In almost every case in which this plan of treatment has been tried there has been a cessation of the fits for a greater or lesser time.

3. A relapse generally occurs at a period varying from a few weeks to a few months.

4. The frequency of fits after the exhibition of opium is—for the first year, at least—lessened more than one-half.

5. The attacks occurring after the relapse are much less severe in character than those that the patient has been accustomed to have.

6. This plan of treatment is particularly valuable in ancient and seemingly intractable cases.

7. In recent cases of idiopathic epilepsy it cannot be recommended.

8. The opium plan of treatment is an important adjuvant to the bromide plan, as ordinarily applied.

9. The opium acts symptomatically, and merely prepares the way for and enhances the activity of the bromides and other therapeutic measures.

10. This plan of treatment permits the use of any other substances which are known to have a beneficial action in epilepsy.

Neurological Fragments. (*Lancet*, August 4, 1894.) By J. Hughlings Jackson, M.D., of London.

The writer gives in detail the account of a patient suffering from cerebral paroxysms (epileptic attacks) with an auditory warning. In this case slight seizures showed the special imperceptions called "word-deafness" (Wernicke) and "word-blindness" (Kussmaul), inability to speak, and spectral words (auditory and visual), with retention of ordinary sight and hearing.

The patient, a man aged twenty-eight years, has been subject to cerebral paroxysms for six years, which occur when he is "at his best" or when asleep, or preparing to sleep. In slight seizures he is warned by a buzzing noise, then becomes deaf, so that he cannot understand words said or written, and cannot express himself. Neither sight nor hearing is affected during the attack. During this loss of understanding, while possessing no control over his thoughts, certain thoughts relative to his state occur, and are accompanied by a spectral word which the patient believes to be the same as thought. In an account given at a later date, the patient divides the loss of understanding into three states: 1. Loss of understanding accompanied part of the time by certain thoughts, and the remainder by the appearance of words. 2. Loss of understanding accompanied part of the time by certain thoughts. 3. Loss of understanding only. In the first and worst state, when seized with the loss of understanding, certain thoughts present themselves which always refer to his state, and take the form of an interior conversation,—spectral and auditory words carried on independently of the will. In a still later statement the patient says that in his loss of understanding he is unable to realize or to express an intelligible word, and so differs from an illiterate man who could repeat words or sentences even if he did not know the meaning of them. He cannot read, for he knows none of the words, although sight and hearing are not affected. In July, 1894, the patient was again heard from. The attacks have become less frequent and are not accompanied by the appearance of words.

In this complicated case the author does not, for the present, attempt to analyze its symptomatology.

Remarks upon the Medicinal Treatment of Chronic Epilepsy. (*American Journal of Insanity*, July, 1894.) By E. D. Bondurant, M.D., of Tuscaloosa, Alabama.

Since the practice of bloodletting was commenced in the treatment of the *status epilepticus* at the Alabama Hospital for the Insane, nearly all the cases have recovered, whereas previous to this mode of treatment a large percentage of the patients died. In thirteen severe and typical cases in which coma was complete, and convulsions returning at short intervals, there was entire relief in nine cases, partial relief in two cases, one without effect, and one death. The patient who died had been previously relieved by bloodletting, and was almost *in articulo mortis* at the time when venesection was practised. A full dose of chloral is to be given in the beginning of the attack, repeating it, if necessary, after two to four hours. If the convulsions are not checked, or persistently recur as the effect of the chloral wears off, a vein is opened and twelve to twenty-four ounces of blood are withdrawn. Bondurant concludes that: 1. Borax, antipyrin, acetanilide, phenacetin, and many other alleged anti-epileptic agents are, save in rare cases, without influence over the course of chronic epilepsy with insanity. 2. β-naphthol is occasionally beneficial, but probably not more so than catharsis. 3. The bromides will postpone the occurrence of convulsions, but in most cases do more harm than good. 4. In dealing with the maniacal attacks, seclusion may be necessary. Sedatives should be employed very rarely, if at all. 5. The best single remedy in the *status epilepticus* is bloodletting. Of drugs, the most valuable is chloral.

Causation and Early Treatment of Mental Disease in Children. (*Journal of the American Medical Association.*) By A. W. Wilmarth, M.D., of Norristown, Pennsylvania.

The writer, in this paper, seeks to demonstrate the frequency of acute disease as a causative factor in the production of juvenile mental disease; its pathology and treatment. The article is based on the examination of one thousand carefully selected histories at the Elwyn Institution for the Feeble-Minded, and about three hundred autopsies from various sources. In three hundred and twenty-two of these cases the mental disease appeared to have originated *solely* from acute disease or injury, such as would bring the child under the physician's care. In these cases spasms of dentition lead with seventy-five cases, followed in order of frequency by traumatism, cerebral inflammations, scarlet fever, and epilepsy of unknown origin, while among the post-mortem conditions atrophic changes largely predominate.

While the hopelessness of treatment in these terminal conditions is acknowledged, the possibility of better results in earlier stages, before inflammatory products have replaced the normal tissues, is suggested.

On the first sign of nervous disease the child should be relieved of mental work, and placed under the best possible hygienic conditions to regain its health.

Irritating diet *must* be avoided. Bromides, in large doses, disturb nutrition and mask the progress of the disease. Tonics should be given. Among the most efficacious remedies the author has found iodide of iron with iodide of potassium. Chloride of gold has been serviceable. Less so are the preparations of arsenic. Careful feeding is most essential.

DERMATOLOGY.

IN CHARGE OF W. A. HARDAWAY, A.M., M.D.,
Professor of Skin-Diseases in the Missouri Medical College, St. Louis.

ASSISTED BY

C. F. HERSMAN, A.M., M.D.,
St. Louis.

Tumors of the Skin. (*Archiv für Dermatologie und Syphilis*, 1894, vol. xxviii., Nos. 2 and 3.) By Professor Jarisch, M.D., of Graz.

During the past year Jarisch had three rare cases of tumor of the skin for study,—namely, 1, *hydradénome eruptif* (Jaquet-Darier); 2, *epithelioma adenoides cysticum* (Brooke); and, 3, *dégénérescence colloïde du derme* (Besnier-Balzer). The clinical symptoms were the same in each, and the pathological diagnosis was alone made by the microscope. The writer does not consider that he will be able to diagnose these cases clinically from each other, even if he should again be called upon so to do. His conclusions are that the tumor described as *hydradénome eruptif*, syringocystadenoma, has nothing whatever to do with the sweat-glands, nor does it originate in embryonal cells. It is due to a growth of the endothelial cells of the blood-vessels, and is really a hæmo-angio-endothelioma; perhaps also at the same time a lymphangio-endothelioma. The tumor described by Hebra and Kaposi under the name of *lymphangioma tuberosum multiplex* is identical with that of hydradenoma. The name of lymphangioma is not correct, as in the affection no true angioma exists, and the fact that it originates in the lymph-vessels from which the tumor springs is not mentioned. The author suggests that the name be changed to hæmo-angio-endothelioma tuberosum multiplex. Brooke's *epithelioma adenoides cysticum* has with the above tumor nothing in common. It is an epithelioma identical with the author's second patient. The epithelial cells in this case have their origin in the hair-follicles, and more especially from the lanugo hairs. Puberty plays an important *rôle* in the development of these tumors. The so-called adenoma sebaceum has no connection with adenoma, and is identical with the tumors described by Brooke, and similar to the author's second case. The author suggests the name of tricho-epithelioma papulosum multiplex, with the addition of rodens to those cases, as in his, where an ulcus rodens was a prominent feature. The so-called colloid degeneration of the skin, which is probably the same as the colloid

milium of Wagner, is not caused by a colloid degeneration of the connective tissue, but of the elastic fibres, and is the same condition as was found by Schmidt in old people, and later by Reizenstein in young persons. Colloid milium and colloid degeneration of the skin have nothing in common with the hydradenoma. Carefully prepared plates, histories, literature, and a report of the microscopical examination accompany the article.

The Function of the Sweat-Glands in Man.—Unna (*British Journal of Dermatology*, September, 1894) has somewhat changed his views in regard to the function of the sweat-glands as expressed by him some years ago. At that time he held the radical opinion of Meissner that only fat was formed in the sweat-coils, the watery portion of the sweat coming from the papillary layer of the skin. Unna now adopts the view of Henle that, during ordinary secretion, the sweat coming from the glands is made up largely of specific secretory elements, but that under the influence of appropriate stimuli a watery fluid is formed which is very poor in specific elements. Most of the paper is taken up with an account of the experiments which the author has made to prove the presence of fat in the sweat.

PATHOLOGY.

IN CHARGE OF ALLEN J. SMITH, A.M., M.D.,
Professor of Pathology in the Medical Department of the University of Texas, Galveston, Texas.
AND
HENRY W. CATTELL, A.M., M.D.,
Demonstrator of Morbid Anatomy in the University of Pennsylvania; Prosector to the American Anthropometric Society; and Pathologist to the Presbyterian Hospital, the Institution for Feeble-Minded Children at Elwyn, etc.

Concentration of the Antitoxin of Diphtheria Obtained from the Milk of Animals which Have Been Rendered Immune. (*Zeitschrift für Hygiene und Infectionskrankheiten*, 1894, vol. xviii., No. 2.) By A. Wasserman, of Berlin.

As milk is a product of the blood, it naturally follows that the amount of antitoxin contained in it is less than in the blood itself. Indeed, the amount is often so small that it is necessary to concentrate the material for therapeutic purposes, as has already been done by Brieger and Ehrlich in tetanus. These workers obtained the antitoxin of tetanus from milk, in a concentrated form, by precipitating it with ammonium sulphate, only a small portion remaining in the albuminous filtrate. The precipitate was then dissolved in water, dialyzed, and evaporated to dryness in a vacuum at a temperature of 35° C. The powder thus obtained was found to be four hundred to six hundred times more powerful than the milk itself. On account of the loss that took place during dialysis, Brieger and Cohn adopted the method of finely pulverizing the ammonium sulphate precipitate,

and next mixing it with pure chloroform. The heavier ammonium sulphate sank to the bottom, and the specifically lighter antitoxin floated on the surface, from which it could readily be removed. The powder thus prepared was found to be four hundred times more active than the milk.

As the amount of the antitoxin of diphtheria in the milk of animals rendered immune is large, it is only necessary that a ten- or twentyfold concentration be practised. As the above method could not be considered a quantitative one, and the difficulty of keeping the material sterile was so great, it was abandoned for the following procedure: Great care is taken in obtaining the milk as sterile as possible, and twenty cubic centimetres of a normal hydrochloric-acid solution are added to each litre of the milk. Just enough pepsin is then added to produce coagulation quickly. After the casein has separated, the whey is poured into a large flask and thoroughly agitated with an excess of chloroform for a considerable time. On settling, it is found that the heavier portions sink to the bottom,—especially the fat globules,—and you obtain a clear whey, free from fat and bacteria, which is peculiarly fitted for further manipulation, and which will remain active for months. To this fluid is added thirty to thirty-three per cent. of ammonium sulphate. The resulting mixture is filtered, and the precipitate is quickly evaporated in a dish to dryness in the vacuum, the excess of ammonium sulphate absorbed, and the remainder dissolved in water according to the original amount of milk taken,—*i.e.*, if a tenfold concentration is desired and five litres of milk were employed, you would dissolve in five hundred cubic centimetres of water. The amount of ammonium sulphate is now so small that not the slightest injury is done the child by taking it into the system. That none of the antitoxin was lost in this method was shown by control experimentation.

BOOK REVIEWS.

A Text-Book of the Diseases of Women. By Henry J. Garrigues, A.M., M.D., Professor of Obstetrics in the New York Post-Graduate Medical School and Hospital; Gynæcologist to St. Mark's Hospital in New York City; Gynæcologist to the German Dispensary in the City of New York; Consulting Obstetric Surgeon to the New York Maternity Hospital, etc. 8vo. 310 Engravings, 2 Colored Plates. Pp. 690. Price, cloth, $4; sheep, $5. Philadelphia: W. B. Saunders, 1894.

Examination of this work soon convinces one that the object of the author—to give a modern and practical treatise to general practitioners and students—has been very successfully attained. The whole subject is treated in an international manner, so to speak, showing on every page traces of the perfect familiarity of the author with the entire literature, but especially evidencing the proud place that America

holds in this subject. The language is everywhere concise, intelligible, and agreeable. A happy union of conservatism and modern views seems to have been attained, while all lengthy discussion is necessarily omitted and numerous and valuable footnotes elucidate special subjects.

In the main the division of the subject is good. The first chapter, on the Embryology, Anatomy, and Physiology of the Organs involved, is easily the best that we have seen on the subject, and anatomical accuracy is a distinctive feature throughout.

Some portions may be found a little confusing, especially that on "Treatment in General," but a little care will soon overcome this. All operations are well described, in a short space, and yet completely. The subject of ovarian cysts is treated in a masterly manner in all respects and the clinical chapters deserve especial commendation. Pathology, we think, receives too little attention, both in view of its own importance and of the especial authority of the writer in this matter; here, also, we find a few signs of hesitation to accept the latest generally accepted views,—for instance, in not considering lupus of the external genitals as tuberculous. We look in vain in many portions of the work for the *direct* opinion of the author as to the relative merits of the various procedures described. Despite the great value of warm injections in hemorrhage and shock, we would hardly advise a temperature of 110° to 115° F. without some caution, for intravenous, subcutaneous, and intraperitoneal injection (p. 171); the latter temperature is dangerously near the coagulation point of myosin, and large quantities thrown directly in contact with the most important tissues, as in the intravenous method, would be better used at a somewhat lower temperature. The strength of the solution in sodium chloride, given as "six parts," should be definitely stated. Sodium sulphate is a very unpleasant and rather harsh "aperient," and we know of no good reason for its substitution for less objectionable remedies; more unfortunate, however, is the time of its administration, especially after operations for the repair of the perineum,—and here the author adheres, *unfortunately*, to the old method of keeping the bowels bound for three or four days following the operation.

As a whole, we repeat, the work is a valuable and trustworthy addition to the already numerous ones on the subject, and should receive a warm welcome.

L. A. P.

Income Tax: How to Get It Refunded. By Alfred Chapman. Tenth Edition. London: Effingham, Wilson & Co., 1894–95. Small 8vo, pp. 60, 1s. 6d.

"This handbook contains instructions as to assessment, appeal, abatement, repayment, by a gentleman who has for many years given special attention to the interpretation and administration of the Income Tax Acts [of England]. He asserts that, as a rule, medical men are much over-assessed, and gives advice as to the nature of deductions which may properly be made from the gross income, in returning the net income. The need of such a handbook is sufficiently shown by the following extract from an official circular which Mr. Chapman puts upon his title-page: 'If the Board does not consider it necessary *to offer* such deductions, it will be sufficient to allow them *when claimed*.' As to the morality of this attitude we shall not pretend to express an opinion. Mr. Chapman has done good service by calling public attention to the curious standard adopted at Somerset House."—*British Medical Journal*, October 6, 1894.

Mr. George C. Holt, of New York City, in discussing the new income tax (*Independent*, October 25, 1894), says, "It was held under the former acts [of the war of the rebellion and afterwards] that a professional man, in making a return of his income, could either base his return upon his actual receipts during the year, deducting his actual payments, or upon his actual earnings during the year irrespective

of the amount collected, deducting his actual indebtedness irrespective of the amount paid, but that he must pursue one theory or the other throughout."

A Manual of Instruction in the Principles of Prompt Aid to the Injured; Including a Chapter on Hygiene and the Drill Regulations for the Hospital Corps, U.S.A. By Alvah H. Doty, M.D., Major and Surgeon, Ninth Regiment, N.G.S.N.Y.; late Attending Surgeon to Bellevue Hospital Dispensary, New York. Second Edition, revised and enlarged. New York: D. Appleton & Company. London: 33 Bedford Street, 1894.

The author's intention, while writing this little book, has been to supply those who might be anxious to know what to do for the temporary relief of the sick or injured with the necessary information. The construction of the human body and the functions of its various organs are considered *seriatim*. Bandages and dressings, antiseptics, disinfectants, deodorants, and the manner of properly using each are carefully described. The treatment of contusions, wounds, hemorrhage, fractures, dislocations, sprains, burns, scalds, frost-bite, unconsciousness, shock, apoplexy, concussion and compression of the brain, etc., is detailed at some length. Asphyxia and drowning, poisons and poisoning, the convulsions of children, foreign bodies in the eye, ear, nose, etc., and the rules of personal hygiene also receive due attention.

It is an admirable little book and more than fulfils its object. Clear and concise, every portion of the necessarily complicated subject receives such thorough treatment as to render it clear to the mind of the average layman. J. P. T.

The Pocket Anatomist. By C. Henri Leonard, A.M., M.D., Professor of Gynæcology, Detroit College of Medicine. Leather, 300 pages, 193 illustrations, postpaid, $1.00. The Illustrated Medical Journal Company, Publishers, Detroit, Michigan.

The eighteenth edition of this handy little book on anatomy is printed upon thin paper and bound in flexible leather, so as to be readily carried in the pocket. It is well illustrated, and should prove very popular as an aid to the student in preparing for examination. J. D.

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The Late Ophthalmoscopic Appearances
of Supposed Embolism of the Central Retinal Artery.



Left Eye

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ORIGINAL COMMUNICATIONS.

DESCRIPTION OF A CASE SHOWING THE LATE OPHTHALMOSCOPIC APPEARANCES OF SUPPOSED EMBOLISM OF THE CENTRAL RETINAL ARTERY.[1]

BY CHARLES A. OLIVER, A.M., M.D.,

One of the Attending Surgeons to Wills' Eye Hospital; Fellow of the College of Physicians, Philadelphia; Honorary Fellow of the Chicago Academy of Medicine, etc.

On the 2d day of October, 1893, a sixty-four-year-old man, C. K., of South Bethlehem, Pennsylvania, applied to Dr. George C. Harlan's clinic at Wills' Eye Hospital. The patient, a worker in steel, stated that nine days previously, while knocking off clinkers from a grating, he noticed a sudden loss of vision, which lasted about two hours. Three days later the blindness repeated itself, lasting this time but thirty minutes. During the following forty-eight hours his vision remained good, when, without any apparent cause, he experienced periodical attacks of dimness of vision and blindness.

At the time of examination the eye was blind, the pupil was dilated, and the iris was immobile. A marked œdema, especially in and around the macula lutea, existed. A typical cherry-colored spot could be seen in the foveal region. Both the retinal arteries and veins were small, the arterial currents being thread-like and even invisible in places. The perivascular channels were thickened and opaque. No arterial pulse could be produced upon pressure. The left eye was unaffected, no fundus lesion could be

[1] Read before the American Ophthalmological Society, May 31, 1894, at the Third Triennial Meeting of the Congress of American Physicians and Surgeons.

detected, and vision could be brought to normal by the employment of a proper corrective lens.

The patient was lost sight of until the month of May, 1894, when he voluntarily reappeared in order that he might obtain a glass for an increasing presbyopia. At this time, through the kindness of Dr. Harlan, the accompanying sketch of the fundus-details, by Miss Margaretta Washington, of this city, was obtained.

The eye was blind and the pupil was undilated and fixed. The media were clear, and the fundus-details, as here shown in the lithographic plate, were those of optic-nerve atrophy, gross perivasculitis, and retinal degeneration.

Verbal descriptions of the late ophthalmoscopic appearance of this variety of disease are so rare in ophthalmic literature, and the visible changes in the present instance are so characteristic, that they have been deemed worthy of an accurate and faithful graphic representation.

TWO CASES OF ULCER OF THE DUODENUM IN WHICH LAPAROTOMY WAS PERFORMED, WITH REMARKS ON ULCERS OF THE DUODENUM.

BY A. MARMADUKE SHEILD, M.B., F.R.C.S.,

Assistant Surgeon to St. George's Hospital, London.

Writers on general medicine, who refer to ulcer of the duodenum, treat of the subject in general terms. The affection is classed with gastric ulcer, which in all respects it closely simulates, and little or no attempt is made to distinguish between the pathology or symptoms of these two kinds of cases. The opinion prevails that gastric ulcer is rare in men, and therefore, when duodenal perforation occurs in the male sex, the symptoms are peculiarly liable to be overlooked or entirely misunderstood, since they are identical with those of perforation of the stomach, which is so exceptional in the male sex. What is held by physicians of the present day regarding duodenal ulcer may be well summed up by quoting the article on it in the "American Text-Book of Medicine," edited by Pepper.[1]

"Duodenal ulcer is usually single, but is occasionally multiple. In some cases it occupies partly the duodenum and partly the pylorus. In other instances distinct ulcers may be found in the stomach and duodenum. The disease may attend septicæmia, probably as the result of embolism. Severe burns are also at times productive of it, and freezing is said to act in the same way, while erysipelas, pemphigus, and amyloid degeneration of

[1] American Text-Book of the Theory and Practice of Medicine, vol. ii.

the blood-vessels of the intestines have also been claimed to be associated with it. The symptoms are in a great majority of cases identical with those of gastric ulcer, and it is then impossible to distinguish between the two lesions. An ulcer of the duodenum is probably present if the pain does not develop until some hours after eating food, if the position of this pain, together with tenderness on pressure, is situated decidedly to the right of the parasternal line, and if there are profuse bloody stools without vomiting or hæmatemesis. In other cases blood may be vomited and passed by stool. In still others the course of the disease may be entirely latent."

It will serve to make more clear the class of cases I especially wish to illustrate if I quote a typical instance,—selected from several which are scattered about in medical literature,—which is reported by the late Surgeon-Major Robinson, of the Scots Guards.[1] A healthy and muscular guardsman, aged thirty-eight, who was a "bandsman" and well able to perform his duties, played a game of racquette one afternoon and afterward proceeded to a music-hall where he ordinarily performed. He was suddenly seized with violent abdominal pain. The belly became tympanitic, but there was no urgent vomiting. He was conveyed back to his quarters, collapse supervened, and he died in about eighteen hours.

At the post-mortem all the intestines were found matted together, and there was some greenish fluid in the abdomen. The bubbling of gas drew the attention of the pathologist to the duodenum, and an ulcer large enough to admit a crow-quill was found about the centre of that viscus on its anterior aspect. This was not in the least suspected during life, but it is stated that the man had been known to complain of epigastric pain, and to press with his hand there after laughing loudly.

The above abstract well exemplifies what usually happens in these most distressing and mysterious maladies, and the theory of death by poison may readily be started when the surroundings and concomitant circumstances are of a suspicious nature. Murchison relates such a case, where a man died almost instantly from collapse, and a similar case is referred to by Perry and Shaw, in their excellent article on ulcers of the duodenum in *Guy's Hospital Reports* for 1894.

I have been induced to publish the following two cases which occurred in my own practice, because they so well illustrate the extreme difficulty to be met with in the diagnosis of duodenal ulcer, and because it is only by a relation of cases and a collection and consideration of the experiences afforded by them that we can hope to arrive at anything like proficiency in the management of a class of maladies so protean in their clinical manifestations, and so generally unsatisfactory in their treatment. Moreover, the subject has recently been considerably discussed, and it is hoped that this communication may extend and amplify information already

[1] Path. Soc. Trans., vol. ix. p. 220.

acquired. The first case which forcibly drew my attention to the surgical difficulties and uncertainties surrounding the subject of duodenal ulcer was as follows (I am indebted to Mr. Harold, the medical registrar of Charing-Cross Hospital, for the abstract notes of it):

A healthy-looking young man, aged twenty, was admitted to the Charing-Cross Hospital under the care of Dr. Green. His previous history was of little importance. There was a vague account of some epigastric pains and flatulence, but while sitting at the theatre he was seized with severe pains in the abdomen "which doubled him up," and he was brought to the hospital on November 30, 1892. It was then noted that he was in a condition of collapse. The skin was pale and covered with clammy sweat, the temperature 96° F., and the pulse 100, small, and compressible. Severe abdominal pain was complained of, and the belly was distended. There was marked tenderness in the epigastric region. There had been no vomiting as yet, and flatus was passed *per anum*. He was treated with morphine and bismuth. Toward evening his symptoms got worse. The abdominal pain and distention were greater, and he vomited greenish and, subsequently, stercoraceous fluid several times; but no blood was noticed in the vomit.

December 1.—After a hypodermic injection the patient had slept fairly well, but he had vomited several times, and the belly was very much distended. I saw him on December 2, the third day of his attack. He then had the appearance and showed the usual symptoms of one suffering from serious abdominal maladies, and his condition was obviously very precarious. The belly was enormously distended, and the main seat of tenderness seemed to me to be below, near the cæcal region. The diagnosis of perforative peritonitis was made, and the opinion expressed that the lesion was situated in the vermiform appendix. Not having seen the case from the commencement, my mind was hardly enough impressed with the situation of the pain in the epigastric region in the early part of the case, and hence an error was made in the estimate of the position of the perforation.

The abdomen was explored by the usual incision. To my disappointment, the cæcum and appendix were found normal. The intestines were congested, covered with lymph, and enormously distended; and the abdominal cavity was full of purulent fluid and some gas, *without fæcal odor*. The incision was made up nearly to the ensiform cartilage, but nothing discovered, for the intestinal distention made examination very difficult, and the desperate condition of the patient forbade delay. The abdominal cavity was, therefore, washed out and closed. The patient, as is usual in such cases, died about twenty-four hours later, pulseless and collapsed. One could hardly say that the operation did him harm; it certainly failed in doing him any material good.

At the post-mortem examination a perforating ulcer was found on the anterior aspect of the first part of the duodenum. The opening was circular in form, about the size of a threepenny piece, and had thickened callous edges. This was obviously the cause of the general peritonitis; all the other organs and viscera were healthy.

The second case occurred in the person of a strong young carman, aged twenty-three, who was under the care of Dr. Whipham, at St. George's Hospital, on June 11. He had been quite well until five days before admission, when he was seized with violent abdominal pains, vaguely referred to the right side. He had vomited several times, but the bowels had opened twice. Three years previously he had had a similar attack, and had got well. The significance of this latter statement will be seen further on. I saw him, with Dr. Whipham, soon after midnight. He looked fairly comfortable, but the pulse was very quick, and the belly greatly distended. The hernial apertures were empty, and the rectum was devoid of fæculent contents, but a sensation of fluid in the pelvis could be felt through it. No very marked

tenderness could be anywhere elicited. When the patient was asked where his worst pain was situated, he pointed to the right iliac region. Here, also, was tenderness on pressure. Previously, on the same night, I had operated upon a case of very similar nature, and had found a perforation of the vermiform appendix, and I could not divest my mind of the belief that the present case was due to a similar cause, and thus again fell into error. I may, however, mention that the possibility of duodenal ulcer was actually present to our minds, and we discussed it.

The abdomen was opened in the right linea semilunaris, and immediately enormously distended coils of bowels showed themselves, deeply congested and covered with lymph. There was purulent fluid in the pelvis, with much free gas, but this was quite devoid of fæcal odor; its reaction to litmus paper was not ascertained. The cæcum and vermiform appendix were examined with some trouble, and found normal. So great was the intestinal distention, that I opened a prominent coil of jejunum by a small incision, and drained away many basinfuls of fæculent fluid. The incision was closed with a Czerny-Lembert suture, and the collapsed bowel permitted free exploration of the intestine. Nothing could be found, and, reflecting upon the time that would be consumed by prolonging the incision, locating an ulcer of the stomach or duodenum and repairing it, I reluctantly closed the abdomen, and left in a glass drainage-tube, having well flushed out the abdominal cavity with warm water. This patient seemed at first much relieved, but on the evening of the day following the operation he had a recurrence of severe abdominal pain, and soon died. At the post-mortem examination it was revealed that there was a small ulcer which would admit a quill on the anterior wall of the duodenum, about half an inch from the pylorus. The hole was rounded, with thick, discolored edges. At the same level with the ulcer which had perforated was a depression about one-third of an inch in diameter, smooth, the walls not undermined. This was evidently an ulcer that had healed. It was situated on the posterior wall of the duodenum.[1] There was general peritonitis, and a large cavity containing about two pints of brownish fluid was situated above the stomach and below the liver and diaphragm. The abdominal wound had united, and it is especially important to observe that the small incision made to drain the intestine had soundly healed within twenty-four hours, demonstrating the safety of the procedure of draining distended intestine.

Before proceeding to the discussion of the general question of duodenal ulcer, I will briefly quote abstracts of two cases strikingly similar to those first related, which demonstrate the fact that I do not stand alone in the diagnostic difficulties that surround perforating ulcer of the duodenum. Perry and Shaw, in their recent article, state that laparotomy was thrice performed at Guy's for perforative ulcer of the duodenum, but the lesion was never found. Lockwood[2] relates the following cases, of great interest, in the Medical Society's *Transactions* for 1893:

The first case was that of a young man, aged twenty-eight, who was suddenly seized with acute pain on the left side while drinking a cup of tea. This was thought to be an attack of colic, and treated accordingly. Vomiting and tympanites with complete obstruction supervened, but there was no hæmatemesis. On the third day an exploratory abdominal section was performed, and a quantity of foul-smelling gas escaped, while general purulent peritonitis was present. The whole intestine was examined, but no perforation was found. The distended gut was opened and drained,

[1] Post-Mortem and Case-Book, St. George's Hospital, 1894.

[2] Med. Soc. Trans., vol. xv. p. 91.

and the opening closed by a Lembert suture. The abdomen was flushed out. The patient died in seven hours. The chief focus of septic peritonitis was found below the liver, and upon the front part of the duodenum was a small oblong aperture which gave exit to the duodenal contents.

The second case was that of a man, aged forty-one, who, while at his work, was suddenly seized with violent pain in the belly, followed by complete constipation and sickness. The vomit was first the contents of the stomach, afterward of a stercoraceous nature. When first seen the belly was tympanitic, and no vermicular movements were detected. The countenance was anxious, and the man complained of severe abdominal pain. The pulse was 120 and the temperature 99° F. The abdomen was explored through the usual incision. Diffuse septic peritonitis was present, but, although every region was searched, nothing could be found to account for its occurrence. The man died in ten hours, and Dr. Galloway, who made the post-mortem examination, found the most intense focus of inflammation beneath the liver. The first part of the duodenum was perforated by an ulcer, which had sloping edges, situated about an inch from the pylorus.

The abstracts of these two cases clearly show that the diagnostic difficulty felt by myself and illustrated in the instances I have narrated is shared by other surgeons, and now that it is recognized that the prompt treatment by abdominal section of perforating gastric ulcers saves life, the present time seems peculiarly opportune for drawing the attention of the profession to perforating ulcers of the duodenum, which so closely resemble them. It has seemed to me that the compilation of statistical tables as to the comparative frequency of duodenal ulcer, or of certain of its more marked clinical features, would be open to many sources of inaccuracy, and would serve little useful purpose. The undoubted fact that the scars of duodenal ulcers are sometimes accidentally met with post mortem, shows that this condition may not infrequently be recovered from when perforation does not occur, and is a proof that many cases are accidentally overlooked. Perforating ulcer of the duodenum is, no doubt, a rare affection, and a proof of this statement is found in the observations of Norman Moore,[1] who finds that only three cases are recorded in the St. Bartholomew's Hospital post-mortem books between 1867 and 1882, a period of sixteen years. Two of these occurred in men, and showed the usual features of sudden and unsuspected onset. In one of them the ulcer was not even suspected during life. It seems clear from the elaborate researches of Drs. Perry and Shaw, as well as from the perusal of these cases, that the ulcer is almost invariably found on the anterior surface of the first part of the duodenum. Out of fifty-seven cases of rapidly-perforating ulcer collected by them, the lesion was situated there in forty-eight.

I am greatly indebted to Mr. Arthur Latham for valuable assistance in looking up the question of the frequency of duodenal ulcers in the post-mortem books of St. George's Hospital. He finds that in eight thousand one hundred and ninety-two post-mortems in thirty-one years, from 1863 to 1893, there were one hundred and sixteen cases of death from perfora-

[1] Path. Soc. Trans., 34, p. 98.

tion of the intestine (from all causes save rupture); that is, 1.4 per cent. of total deaths.

These one hundred and sixteen cases include twelve of perforating duodenal ulcer; that is, .14 per cent. of total deaths, and 10.34 per cent. of all perforations.

Cases of Perforating Duodenal Ulcer.

1	1892	No. 157	Male aged	34
2	1891	" 306	Female aged	27
3	1890	" 404	Male aged	21
4	1889	" 206	Male aged	37
5	1887	" 165	Male aged	42
6	1883	" 225	Male aged	49
7	1882	" 235	Female aged	22
8	1878	" 190	Male aged	59
9	1875	" 172	Male aged	50
10	1875	" 175	Male aged	52
11	1871	" 34	Male aged	56
12	1871	" 42	Male aged	56

Out of these twelve cases ten occurred in males, only two in females.

The average age is forty-two.

Out of the one hundred and sixteen cases of intestinal perforation, of non-perforating ulcers of the duodenum, or congestions threatening to perforate, there were found twenty-three instances which may be thus arranged,—

	Cases.
Burn with slight ulceration or congestion and early erosion	7
Associated with renal disease	6
Phthisis and tuberculosis	2
Malignant ulceration	1
Associated with scirrhus of pancreas and liver	2
Associated with pleurisy	1

The remaining four cases had no obvious causes.

In nine of the twelve perforating cases the ulcer was situated anteriorly, in three the situation was not mentioned.

I propose (1) briefly to consider the views taken by pathologists as to the formation of these ulcers, and to illustrate their pathological terminations. (2) To pass in review their various clinical symptoms, illustrating my remarks when possible by abstracts of cases. (3) To discuss the appropriate treatment. (4) To draw conclusions which may seem warranted by the present state of our knowledge.

It is well known that the formation of ulcers in the stomach and duodenum has long engaged the attention of eminent pathologists. Rokitansky[1] regards tubercular ulceration of the duodenum as very rare. He refers his readers, for the pathology of perforating duodenal ulcer, to his account of a like process occurring in the stomach.[2] He states his belief

[1] Path. Anat., vol. ii. p. 103.

[2] Ibid., p. 30.

that these ulcers commence as an acute circumscribed red softening, or with a circumscribed sloughing of the mucous membrane. He speaks of the now well-known usual terminations by cicatrization, perforation, hemorrhage, permanent contraction, matting and condensation of the tissues around. It will clear the way at the outset to exclude all causes of ulceration of the duodenum from without, as by gall-stones, the pressure of malignant growths, the slow erosion of an aneurism, or a renal abscess or suppuration in connection with spinal caries.[1] Instances of all these conditions will be found scattered through pathological literature, but are hardly germane to the subject under consideration.

Ziegler,[2] while looking upon the duodenal ulcer as essentially similar in its pathology to ulcer of the stomach, well points out that the latter ulcer, and therefore the duodenal ulcer also, may be caused by any kind of local injury of the mucous membrane which exposes it to the unchecked action of the gastric juice not yet neutralized in the first part of the duodenum, where these ulcers usually begin. Probably the commonest causes of obstructed blood-supply, leading to necrosis of the mucous membrane, are venous engorgements, hemorrhages, arterial anæmia from embolism, spasmodic contraction, or arterial sclerosis. What share such morbid conditions as cardiac and renal changes, alcoholism, syphilis, and Bright's disease may have in bringing about these conditions would be too wide an inquiry for the scope of this paper. A word, however, must be said as to the undoubted occasional association of ulceration of the duodenum with albuminuria and renal degeneration, as so ably pointed out by Dickenson. In the post-mortem and case-book of St. George's Hospital for 1890 may be noted four such cases, where ulcers were found in the duodenum, and in one instance in the cæcum also, in association with the large white kidney and interstitial nephritis. The symptoms during life were vague, and the sickness and diarrhœa might well have been attributed to other causes. Perry and Shaw found no less than twelve cases of ulcer of the duodenum out of seventy associated with Bright's disease. There seems no distinct proof that albuminuria is associated with the rapidly fatal perforating ulcer, which we are principally considering, though, of course, it may be a predisposing cause.

The association of ulcer of the duodenum with burns and scalds has long occupied the attention of pathologists. It is remarkable that modern investigators have cast doubts upon such association, though there can be no question that this phenomenon is much rarer now than was formerly the case. Curling's well-known paper in the Medico-Chirurgical Society's *Transactions*[3] relates ten cases of this lesion associated with burn, while Hewitt still earlier[4] found three instances of ulceration of the duodenum

[1] Davies-Colley, Path. Soc. Trans., vol. xxxvii. p. 561.
[2] Ziegler's Path. Anat., pp. 459 and 471.
[3] Vol. xxv. p. 261 et seq.
[4] Trans. Med.-Chir. Soc., vol. i. p. 259.

in seventeen fatal cases of burn examined at St. George's Hospital between the years 1844 and 1846. So Holmes,[1] in his "System of Surgery," mentions sixteen lesions of the duodenum in one hundred and twenty-five cases of burn. The age of the patient and the period of death varied greatly. "The appearance," says the latter writer, "is that of a perfectly indolent ulcer. It is usually situated just below the pylorus: often there are two or three close together. . . . They look as though a portion of the mucous membrane had been cut out." This author also refers to the frequent absence or vagueness of symptoms, and where severe manifestations, as melæna, hæmatemesis, and signs of perforation occur, he seems to think the prognosis highly unfavorable. Curiously enough, from an early period doubt was thrown upon the existence of duodenal ulcer in association with burns. Thus, Wilks,[2] writing soon after Curling, made a careful examination of twelve fatal cases of burn, and found no lesion in the duodenum. He contrasts his experiences with those of Curling, but gives no explanation of the discrepancy. McCarthy,[3] relating a fatal case of duodenal ulcer from vomiting and hæmatemesis in a girl aged seven, states that this complication is rare at the London Hospital, only another case besides the one he mentions having occurred in eight years. Lockwood has recently been investigating this subject, and I have his authority for stating that out of one hundred and thirty-eight fatal cases of burn occurring in the last nine years at St. Bartholomew's Hospital, only one had ulcer of the duodenum, although the pathologist had obviously been on the alert to detect duodenal lesions. Perry and Shaw, in *Guy's Hospital Reports* for 1894, found five cases of duodenal ulcer in one hundred and forty-nine cases of burn. In reviewing all the cases of burn-ulcer, they find it more frequent in females than in males; this they ingeniously attribute to the burnt surfaces being usually, from the arrangement of the clothing, more extensive. Quite recently, also, some of the more advanced of the younger school of pathologists have asserted disbelief in the relationship between burns and duodenal ulcers. The conclusion is irresistible that some surgeons, especially in former times, had experience of a condition which now seldom exists. The explanation is probably in the direction of sepsis and the improved methods of cleanliness at present in vogue regarding the treatment of burns. The profuse diarrhœa which accompanies extensive and dirty burns is very suggestive in this respect, and so are the patches of hemorrhagic congestion and inflammation so often found in these conditions throughout the small intestine. It is easy to understand that if one of these patches occurred in the first part of the duodenum, the unrestrained action of the powerful gastric juice, not yet neutralized by the bile, might readily cause rapid ulceration and perforation. It is a striking fact that ulcera-

[1] Holmes's System of Surgery, vol. i. p. 394.
[2] Guy's Hospital Reports, 1856.
[3] Path. Soc. Trans., vol. xxv. p. 120.

tion of the duodenum should also have been found in cases of frost-bite.[1] Thus, Samuel Adams, an assistant surgeon in the United States Army, relates the case of a private, aged thirty-six, who was confined in the guard-house awaiting trial by court-martial. The man's feet became frost-bitten, and when first seen gangrene had already set in. After being in the hospital for a week, diarrhœa ensued, with rapid exhaustion. The line of demarcation formed, but the patient died exhausted in about three weeks. At the autopsy the duodenum was found covered with small, irregular ulcers, with rough, serrated edges extending in different directions.

It will be observed in connection with this case that the conditions found in bad burns of sloughing and septic tissues were present, and the explanation is probably the same,—namely, an infarction of the vessels of the mucous membrane due to septic emboli, and the consequent unrestrained action of the gastric juice. Post-mortem examinations upon cases of septic ulceration after frost-bite have not been very frequent, or possibly duodenal ulcer may more commonly have been found. That ulcers of the duodenum in such septic conditions as burns are due to septic embolism of some small vessels in the intestinal walls seems a more rational explanation than the old theory of hyperexcitation and inflammation of Brunner's glands. Looking upon such embolic processes as almost accidental, it is easy to understand how several cases may occur in the experience of one surgeon and none in that of others, and hence very erroneous inferences may be adduced as to the comparative frequency of duodenal ulcer after burns. There is one point regarding the formation of duodenal ulcers which it seems to me is not sufficiently dwelt upon, and that is the probability of their origin in actual traumatism of the intestinal coat by some hard or irritating substance, as a piece of bone which escapes stomach digestion. In this way, it seems to me, are best explained the mysterious cases where the first symptoms are those of perforation, and which occur in healthy young adults. Professor Axe, of the Veterinary College, states, however, in a letter to me upon the subject, that, though he has made hundreds of post-mortem examinations upon the carnivora generally, he has never observed a death from perforation of the duodenum, while rectal ulcers are not uncommon. All writers on ulceration of the stomach and duodenum agree as to the comparative frequency of duodenal ulcers in young males. I can hazard no explanation of this very curious fact, unless it be the greater frequency of haste in eating and bolting indigestible food, but its clinical significance is of the first import. Trier, of Copenhagen, who wrote a very comprehensive paper on this subject,[2] collected twenty-six cases of perforating ulcer of the duodenum from the records of the Frederik's Hospital. He also tabulated a number of cases from other sources, which showed that the ulcer was situated in the duodenum in 10.7 per cent., and

[1] American Medical Times, February 28, 1863.

[2] British and Foreign Medico-Chirurgical Review, 1864, p. 157.

he concludes that the ulcer most generally occurs during manhood, the average age being about forty-two and one-third years. A striking similarity has been observed in the Guy's and St. George's estimates. Brinton,[1] in discussing the large number of six hundred and fifty-four cases of ulcer of the stomach and duodenum, makes the proportion of stomach ulcer in females over males as two to one. Trier finds that the perforating ulcer of the duodenum is found five times more frequently in males than in females.[2] Perry and Shaw conclude that, excluding burns, duodenal ulcer is three times as common in males as in females. Moore's cases[3] show a contrast to those of Brinton; for out of thirteen cases of gastric ulcer reported by him occurring in a period of twelve years, ten were found in males and three in females. There was only one case of ulcer of the duodenum, and this was, as usual, in a male, a young gardener at Lewes, about twenty years of age, who for several weeks had had severe pains about two hours after taking food. After a meal of pickled salmon, very violent abdominal agony came on, and he died collapsed in fourteen hours.

The association of ulceration of the duodenum with malignant disease would appear to be very exceptional. Bristowe in describing the pathological appearance found in a case of general cancer mentions a perforating ulcer of the anterior surface of the duodenum, close to a cancerous mass the size of a pigeon's egg. The ulcer seemed to have no direct connection with the growth, but the latter probably acted by lowering the nutrition of the part. In the list of affections of the duodenum collected by Latham, there are three in relation with malignant disease.[4] Typhoid ulcers in the duodenum and the ulcers associated with anthrax or pemphigus are among the rarities of pathology, and need not be further discussed here.

We will now consider the pathological terminations of duodenal ulcers. The ulcer which I am especially considering, and which may well be termed latent, goes on to rapid perforation and death. Ulcers which are more chronic in their course may exhibit a large number of different terminations and conditions. In a considerable number of cases the ulcer erodes into the pancreas, or some large vessel, the patient dying of hæmatemesis. This is a peculiarly common termination of the duodenal ulcer after burns, and most of our museums contain specimens to illustrate it. Duodenal ulcers may cicatrize, and the gut recover its normal functions. On the other hand, the calibre of the bowel may be seriously lessened and contracted. Thus, Lange[5] relates the case of a woman who, after suffering from great mental troubles and digestive disturbances, passed blood in the stools and exhibited symptoms of gastric ulcer, for which she was treated. Eight years after she was operated upon for stricture of the pylorus, as she

[1] Diseases of the Stomach.
[2] British and Foreign Medico-Chirurgical Review, 1864, p. 160.
[3] Path. Soc. Trans., vol. xxxi. p. 110.
[4] Ibid., vol. xxi. p. 356.
[5] Annals of Surgery, 1893, p. 588.

vomited constantly and had a dilated stomach. The pylorus was normal, but the duodenum was so narrowed about an inch from the pylorus as barely to admit a lead-pencil. The stricture was divided and stretched, and the patient made a good recovery.

When a chronic ulcer of the duodenum threatens to perforate, such matting and condensation of the tissues may surround it that the appearance and symptoms of cancer are closely simulated. Billroth is said to have excised the pylorus for cancer when simple ulcer was really present. A specimen of ulcer of the duodenum, where the symptoms closely resembled cancer, occurring in a man aged thirty-six, is described by Gairdner.[1] Stricture of the bile-duct with persistent jaundice, caused by the cicatrization of chronic duodenal ulcer, is sufficiently well known not to need further mention here. An exceptional association of stricture of the duodenum after cicatrized ulcers is the formation of hernia-like pouches in the immediate vicinity. Specimens of this pouched condition of the bowel have been exhibited and described by Charlewood Turner.[2] He attributed the conditions found to spasmodic contractions of the bowel in the vicinity of the stricture. I have already referred to the fact that tuberculous ulcer of the duodenum is considered rare. A case is, however, related by Murchison[3] where a simple ulceration of the duodenum was followed by tuberculous mischief in the lungs. Two of the cases from the St. George's post-mortem books are noted to be in association with tuberculous ulceration into the portal vein with profuse hæmatemesis and death, an exceptional termination, described by the late Dr. Habershon.[4] Perhaps the rarest termination of duodenal ulcer is a communication with the colon. Murchison[5] speaks of this very exceptional condition, and a case of it is related by Saunderson[6] in the person of an actor, aged thirty, who was admitted into the Middlesex Hospital, complaining of excessive pain in the epigastrium, and vomiting a brown pultaceous liquid. He had had four similar attacks, with severe pain after meals. The ulcer in the first part of the duodenum was found to communicate with the colon.

This brief consideration of the pathological terminations of duodenal ulcer will serve to illustrate how various must be the clinical symptoms present, according to whether adjacent vessels, nerves, or viscera are implicated. Usually only a conjectural diagnosis is warranted, and clinically it is probably impossible to distinguish from pyloric ulcers, unless such symptoms as obstructive jaundice, or the pain coming on some two or three hours after food, should point to the duodenum. Ulceration of the duodenum may be exceedingly chronic. Thus, Arnold, in the *Boston Medical*

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[1] Trans. Glasgow Path. and Chir. Society, vol. iii.
[2] Path. Soc. Trans., xxxv. p. 201.
[3] Ibid., vol. xx. p. 174.
[4] Ibid., vol. xxvii. p. 155.
[5] Ed. Med. Gazette, 1857, pp. 4, 127.
[6] Path. Soc. Trans., vol. xix. p. 174.

and Surgical Journal,[1] reports the case of a man who for six or eight years had suffered from such symptoms as epigastric pains, cramps, nausea, and vomiting. His meals were retained without discomfort, but about four hours after eating he had pain and vomited. If nothing was eaten he would occasionally vomit a quantity of whitish, acid, sour liquid. Hæmatemesis with blood in the stools preceded his death, and an ulcer was found in the first part of the duodenum, eroding the pancreatico-duodenal artery.

The hemorrhage in the stools and in the vomit may readily give rise to an erroneous diagnosis. Mr. Leopold Hudson, of the Middlesex Hospital, informs me that he performed an autopsy on a gentleman, aged forty-two, in the year 1889. This patient had suffered during life from repeated intestinal hemorrhage, which was believed by some eminent physicians to be due to cirrhosis of the liver. At the post-mortem examination the liver was found to be normal, as was also the stomach, but on the anterior wall of the duodenum, just beyond the pylorus, was found a large, solitary ulcer. The floor was formed of very little more than the peritoneal coat, the edges were clean cut, and the open mouth of a small artery was apparent. There was no appreciable thickening of the surrounding tissues, and there were no adhesions. The remaining portion of the small and the large intestine was normal.

As regards the treatment of these more chronic cases of ulcer of the duodenum when medical measures fail, it becomes a question whether an exploratory abdominal section should not be performed. Thus a communication may be made between the dilated gall-bladder and the small intestines when the duct is obstructed by a cicatrized ulcer.

The following case, related by Codiville,[2] shows that chronic duodenal ulcer, accompanied by distressing symptoms, is amenable to surgical treatment: A man, aged forty, had for fifteen years suffered with pain in the epigastrium, coming on five or six hours after dinner, and attaining its maximum during the night. There was also daily vomiting containing acid, bile, and blood. Blood was also passed *per anum*. Every variety of medical treatment had been tried without avail. At the urgent request of the patient, an operation was performed. No lesion was found in the stomach, but two fingers' breadth below the pylorus the duodenum was transformed into a hard mass five centimetres long, with numerous adhesions. A coil of the jejunum was picked up and sutured to the stomach. The patient recovered well, and increased in weight. Five months afterward he was able to resume work. He notices, at times, a dragging sensation at the situation of the scar, and only then has vomiting, but he has vomited no more blood. Codiville claims priority for treating duodenal ulcer in this way, and points out that gastro-jejunostomy gives the portion of diseased bowel

[1] Boston Med. and Surgical Journal, vol. xcviii., xcix. p. 407.

[2] Colonial Quarterly Journal of Medicine and Surgery.

rest, and lessens the danger of perforation or hemorrhage. But few cases exhibiting chronic symptoms will probably be treated by the surgeon, though the excision of a chronic ulcer and suture of the bowel are obviously well within the range of modern operators.

The symptoms and diagnosis of the acute perforating ulcer must next engage our attention. In a considerable number of cases the ulcer is absolutely latent, resembling gastric ulcer in this respect. A patient is suddenly seized with agonizing abdominal pain, rapid tympanites ensues, and he dies in eighteen or twenty-four hours in profound collapse. There may or may not be vomiting.

In other cases there is a tendency toward encysting of the extravasated material and the formation of a subdiaphragmatic abscess. In the majority of cases the symptoms are primarily epigastric or in the right hypochondrium, and this, if it can be clearly elicited, is a diagnostic point of the first importance. In a certain proportion of cases the patient will tell us that he has had similar attacks before, or has had pain and vomiting some hours after meals, again drawing attention to the epigastric region. There is one source of error here. When the intestine is perforated the patient often refers his pain to the patch of peritoneum first inflamed by contact with the septic fluid. Thus it happens that in a perforation of the cæcum the pain may be attributed to the centre of the abdomen, and in perforation of the duodenum the extravasated contents, flowing toward the pelvis, may first inflame the peritoneum in that locality. A case is reported by the late Dr. Barclay [1] in which it is expressly stated that intense pains occurred on pressure, and were referred to the lower part of the abdomen, and the same point is observed in one of the cases I have related.

The violent colicky pains attendant upon perforation of these ulcers render the case very likely to be mistaken for lead colic, especially when they occur in the person of a painter. Thus a case is related by Hadham [2] where a painter, aged fifty-six, was admitted to St. George's Hospital suffering from violent abdominal pain. He was writhing about, but pressure gave him slight relief, and he had a well-marked blue line on the gums. He was treated for lead colic, but vomited several times, and died fourteen hours after admission. At the post-mortem a small, clean-cut ulcer was found on the anterior surface of the first part of the duodenum. In these cases the progressive abdominal distentions and vomiting and the usual signs of grave abdominal mischief should warn the practitioner, but the mistake is one that may readily be made.

In like manner confusion may arise in regard to perforation and intestinal obstruction. The distinctions between these conditions are discussed by numerous writers, and I will content myself now with merely pointing out the primary importance of getting a sense of fluctuation *per rectum*, as indicating free fluid in the pelvic cavity.

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[1] Lancet, March 18, 1891. [2] Ibid., Feb. 18, 1871.

In perforative peritonitis occurring suddenly in either sex, with a clear history of epigastric or right hypochondriac symptoms, as previous pain and vomiting or primary occurrence of the pain about the epigastrium, with tenderness on pressure, the perforation is likely to be in the duodenum in males, or near the pyloric end of the stomach in females. And in such cases it seems to me best to make an incision over the affected area. The character of the fluid that escapes may give most important aid. In perforations of the cæcum the pus is intensely foul, and the puffs of gas which escape distinctly fæculent. In ulcers of the duodenum this would probably not be the case, and though one can hardly argue from two instances, the cases I have related show the absence of any fæculent smell or odor in the abdominal contents. This may prove to be a valuable diagnostic sign in the future, and I would here draw prominent attention to it. The reaction of the fluid in the peritoneal cavity should of course be acid in cases of perforation of the first part of the duodenum, but the peritoneal exudation is always excessive and would soon neutralize any acidity, so that this test will not stand universal adoption. Nevertheless, acid fluid was found in one of the Guy's cases related by Perry and Shaw.

A word must here be said concerning the researches into the diagnosis of intestinal perforation by Senn, of Milwaukee.[1] This authority points out that, if the stomach be distended with hydrogen gas and a perforation exists, the gas passes into the peritoneal cavity, distends it, and the liver dulness disappears, which he considers diagnostic. I would point out that disappearance of liver dulness is not unknown in excessive tympanites, and that, therefore, I can hardly assign to this test the same weight given it by the distinguished American surgeon. The escape of bubbles of gas on pressure, when the belly is opened, may lead one directly to the source of perforation. This symptom was of marked aid in the case related to the Medical Society of London last year by Mr. Percy Dean, in which that surgeon demonstrated the feasibility of resection of a duodenal ulcer and suture of the bowel, his patient recovering. Similarly, Mr. Pearce Gould, at the meeting of the British Medical Association for 1894, related a case in which a girl of twenty, after swallowing some fruit-stones, was seized with severe pain in the right hypochondrium (mark this!) with subsequent collapse and vomiting. Twenty-six hours after the onset of acute symptoms he operated, and, as there was nothing to indicate the seat of the perforation, he opened the belly below the umbilicus. Gas and acid fluid escaped. So, having rapidly explored the generative organs and vermiform appendix, Mr. Gould cut down to the stomach above the umbilicus, and immediately exposed a small perforation in the duodenum. This he excised, carefully sutured the wound so made, and, having flushed out the peritoneal cavity, closed the laparotomy wounds, leaving a glass drain in the lower incision. At the close of this operation the patient was in

[1] Senn's Abdominal Surgery, p. 249.

profound collapse, very nearly pulseless at the wrist. Thirty-two ounces of saline solution were injected into one of her veins, and he had the satisfaction of seeing this collapse pass off to a considerable extent. Nevertheless, nine hours later she died, and at the post-mortem examination he found that the duodenal suture was firm and that no water escaped from the bowel under even considerable pressure, but there was general peritonitis. "It was no satisfaction to me," Mr. Gould remarks, "nor benefit to my patient, that the suture was firm while her peritoneum had been left foul. It was only a surgical illustration of the vulgar proverb which cautions us against closing the stable-door when the steed has been stolen."

In the post-mortem room of St. George's Hospital I have made a series of observations on the best position for placing the incision in the abdominal parietes, in supposed mischief about the duodenum. The incision in the median line does not give free access to the right hypochondriac region, and one can easily conceive that it might be difficult to detect and to suture a duodenal ulcer through it. In like manner an incision in the right linea semilunaris appears to be too far external to give access to the pylorus and the first part of the duodenum. A vertical incision four to five inches long, according to the thickness of the parietes, from the right eighth cartilage downward two inches to the right of the median line, is in the majority of instances over the duodenum. Such an incision enables one to explore the pylorus, duodenum, gall-bladder, and under surface of the liver, and through it an ulcer on the anterior surface of the duodenum could easily be reached. I would draw attention to the immense advantage of holding asunder the margins of the abdominal wound, in this and similar proceedings, by means of stout silk loops passed through the parietes. By this means exploration can be most thoroughly managed and the manœuvre greatly facilitates the return of distended bowel. I would also venture to express my opinion that the secret of success in these cases is the complete after cleansing of the peritoneal cavity. Mr. Gould expresses himself strongly regarding this point, but space will not permit me to enter into the subject, beyond stating my belief that our present methods are not sufficiently complete and elaborate.

In conclusion I would draw attention to the following points, which seem clear from a perusal of the published cases of this affection.

1. That in perforative peritonitis there is nothing to point to the duodenum as the site of lesion, unless it is clearly made out that the onset of pain was in the epigastrium or the right hypochondrium; or that epigastric symptoms, as pain and vomiting, had preceded. Great care should be taken in the investigation of this part of the history, which is most vital and important.

2. That, considering the frequency of duodenal ulcer in males, the possibility of this affection should always be borne in mind by the surgeon who is called to cases of perforative peritonitis occurring in men.

3. That the non-fæculent and sometimes acid nature of the extravasated

fluids and gas may serve as a most important diagnostic aid, and the incision may be made small, as an exploratory effort only, until this vital point is made clear. When once the surgeon is convinced that the exudation is non-fæculent, and especially if it be acid, the region of the stomach and duodenum should be explored without loss of time.

4. In severe shock, it is, perhaps, well to wait for a few hours before operating. The peritoneum must be most energetically washed with warm water; and a drainage-tube placed in the pouch of Douglas would probably be of service.

THE TREATMENT OF VARICOCELE.

BY FRED. C. WALLIS, B.A., M.B., B.C. (CANTAB.), F.R.C.S. (ENG.),

Assistant Surgeon to Charing-Cross Hospital; Lecturer on Surgical Pathology; Assistant Surgeon to Metropolitan Hospital, London.

THE treatment of varicocele may be either palliative or radical.

I do not propose to discuss the palliative measures, as I hold them to be of little worth in those cases where patients seek relief for continuous pain and discomfort. A truss or metal ring seems to me only further to call the patient's attention to what might otherwise be forgotten, and, as far as I have tried them or seen them tried, they are of little or no practical value. A properly-fitting suspensory bandage certainly affords relief in some cases, especially where the scrotal tissues are unusually lax, but unless the apparatus fits absolutely well, the discomfort from its use is almost as great as that for which it is applied.

With regard to radical or operative measures, what must naturally first engage a surgeon's attention is the question of the advisability or even justification of the operation.

In this country varicocele is a bar to any man desirous of entering either the army or navy, or many of the public services; and in these cases there is no choice. Cases other than these seldom come for relief, unless there is some obvious pain, of a dull, aching, neuralgic type, which, when it becomes more or less continuous, does undoubtedly affect the patient's health, bodily, and more especially mentally. In these cases, if, after a fair trial with purgatives, and what moral advice the surgeon may think fit to give, the symptoms still continue, I regard it as not only justifiable but imperative to operate, unless the patient is a monomaniac in genital matters, when no operation is of any use.

The results of operations for varicocele show, as well as any operation can, what a great advance has been made in surgery since aseptic methods have come to be understood and practised.

Looking back for a moment at the old operations,—such as were practised by Erichsen, and originally introduced by Vidal de Cassio,—where a

wire was passed in two places through the skin, including the veins, which were cut through by a gradual process of screwing up the wire and *ulceration* of the veins, or the operation as carried out by Curling, where two pins were inserted between the vas and the veins at an interval of three-quarters of an inch, and a silk suture was passed between in a figure-of-eight, with subsequent subcutaneous division of veins, we see that these operations, from our present view, seem full of risk, and, indeed, were so; the risks being those of fatal septic thrombosis, pyæmia, and sloughing of the testicle. Bearing these probable calamities in mind, very few surgeons at that time would operate in cases of varicocele.

Thanks mainly to "Listerism" and improved methods, the treatment of varicocele by operative measures is now most successful, as the accompanying statistics show.

The operation for varicocele may be performed either subcutaneously or by the open method.

The subcutaneous method has not, I think, received sufficient attention from writers on this subject. Jacobson scarcely mentions it, and Bennett does not speak well of it.

In the five years 1889–1893, inclusive, there were undertaken at St. Bartholomew's Hospital one hundred and seven operations for varicocele; of these, forty-eight were performed subcutaneously,—*i.e.*, 44.85 per cent.; and with the exception of three cases, in which slight suppuration occurred, there was no *contre-temps* whatever, other than slight orchitis in four cases; eliminating the latter, these cases show a percentage of 93.75 of non-septic recoveries. Such a record compares very favorably with the results of the open methods, as will be seen in the statistical table at the end of this paper.

The details of the subcutaneous operation are as follows:

The scrotum and pubes are shaved and well washed with soap and water the day before the operation, and again the morning of the operation, —at all events a few hours before,—when a scrubbing-brush may with advantage be used. Ether is then brushed over the parts, and a towel wrung out in one to one-thousand solution of perchloride of mercury is bandaged over the prepared skin. A saline purge is given the morning of the operation, and, if necessary, castor oil may be given overnight as well. At the operation, the cord is grasped just below the external ring with the upper hand, and about three-quarters of an inch below with the lower hand; the vas deferens is then separated and kept back and the veins are held in front; it can be quite readily ascertained by the finger and thumb, when placed on opposite sides of the scrotum, that nothing intervenes between the apposed layers of skin, so that any risk of perforating a vein may be minimized.

The cord is then handed over to an assistant, who should always be asked whether he is absolutely sure that the vas is behind his thumbs. The operator then takes a curved needle, threaded with silkworm gut, and passes it through both layers of the scrotum between the vas and the veins;

the ligature is held and the needle withdrawn. Another ligature is passed in a similar manner about three-quarters of an inch below this.

Now the assistant lets the veins slip through his fingers and merely holds the skin. The operator changes the sharp-pointed needle for a blunt-ended aneurism-needle, which, unarmed, is passed through the perineal puncture *over* the veins,—*i.e.*, between the veins and the skin,—and then out through the distal puncture; the aneurism-needle is then threaded with the end of the ligature, which was passed in *below* the veins, and withdrawn with the ligature. The same manœuvre is carried out with the other ligature.

Now the mass of veins lies *encircled* by the ligatures, which are tied very tightly, the lower one *first;* the ends are cut quite close to the knot and the skin pulled up over the knots, which disappear into the scrotum, and the operation is finished.

Collodion pasted over a double layer of blue gauze is applied to the punctures, a small piece of blue wool is placed over the gauze, and a T-bandage completes the dressing. I wish to emphasize the point of tying the lower knot first, as it prevents the accumulation of blood in the included portion of the veins, which necessarily occurs if the higher ligature be first tied.

The advantages I would claim for this operation are (1) the short time it takes; (2) the absence of all blood-extravasation, with its attendant evils; (3) the complete safety in careful and skilled hands; (4) the excellent results which are obtained.

It is generally not necessary to anæsthetize the patient; the operation can be done under cocaine. If only one ligature is used, nitrous-oxide gas alone is sufficient; but I do not regard this method as advisable, because of the possibility of the one ligature not being sufficiently tightly knotted to occlude the veins. The absence of blood-extravasation is a great feature; this often occurs in the open operation, and is followed by œdema and some inflammation of the scrotum, and occasionally also by epididymitis or orchitis.

If the precautions I have mentioned above are thoroughly carried out, especially that of feeling the two scrotal surfaces in apposition, with no veins intervening, the operation is a perfectly safe one.

Great care should be taken in the preparation of the ligatures, which should be boiled for half an hour, and then kept in either perchloride solution one to five hundred, or in one to twenty carbolic lotion.

The only case of subcutaneous ligature for varicocele which went at all wrong in my own practice was where a silk ligature was used which had been insufficiently boiled; some slight suppuration occurred subcutaneously, although in the event the patient did very well.

Another point in the after-treatment is to insist that the patient shall keep in bed for at least seventeen days. There is occasionally some difficulty in making patients understand this necessity, as they feel so well after the first two or three days.

The *open operation* may be performed by a high incision,—*i.e.*, just below the external abdominal ring,—or by an incision much lower down. The former is undoubtedly the better in every way, although the low incision is still practised by some surgeons.

When the low incision is practised, it is not unusual for the varicocele to recur, because at the lower end of the cord, as the veins emerge from the epididymis, they are widely spread, and veins may be left out. Again, many veins enter the plexus higher up than where the incision is made; thus another source of failure occurs.

It has been suggested that when veins are ligatured low down, the possibility of hydrocele as a sequela does not exist; but it has not been my experience to see hydrocele occur after high ligature, except in occasional cases where there has been some acute effusion into the tunica vaginalis, which soon disappears. The only case of persistent hydrocele after operation for varicocele which has come under my care was one where the low incision had been made. I have no proof that the hydrocele did not exist previously to the operation, but the surgeon who operated on the varicocele is notably a most careful observer.

In the statistics given below it will be seen that of the one hundred and seven cases fifty-nine were done by the open operation. Of these fifty-nine cases there were twenty-two cases of suppuration, mostly slight, certainly. Among these suppurating cases were five of hemorrhage, due to slipping of the ligature, and one case in which a large portion of the scrotum sloughed. This brings the percentage of healing by first intention down to 62.72, the percentage of suppurating cases being as high as 37.28.

The details of preparation in this operation are precisely similar to those which have already been described in the subcutaneous method. These having been carefully carried out, an incision two inches in length is made through the skin, beginning immediately above the external ring, and carried downward; this should go as deep as the sheath round the veins, and before this is opened it is very essential that all bleeding should be stopped, or else, immediately the fascia is cut through, the blood is soaked up by the loose areolar tissue found underneath the fascia, and this has a material effect on the after-success of the operation. When the hemorrhage has been stopped the sheath is opened, and the veins just below the ring will bulge out. These veins are now separated from the vas, and an aneurism-needle passed beneath them, armed with moderately stout silk. Another ligature is passed in a similar manner, at a distance between three-fourths and one and a half inches below the first, according to the amount it is thought necessary to shorten the cord.

The lower ligature is tied first, then the upper one, and the intermediate mass of veins is cut away with scissors, care being taken that *at least* a quarter of an inch is left in front of the ligature. Now a straight needle threaded with quite fine silk is passed through the quarter inch of veins

mentioned above, and the ligature is drawn tight enough to approximate closely the cut ends of the veins, and thus the necessary shortening of the cord is produced without any risk of the ligature round the veins slipping and so causing secondary hemorrhage,—a risk which is a very possible one if the cord is shortened by uniting the ends of the ligatures which pass round the veins.

Mr. W. H. Bennett suggests that it is better not to open the sheath, as it helps to support the testicle; but if the intermediate portion of the veins is removed, I do not see how this can be. Certainly, the chances of hemorrhage into the loose tissue are fewer if the sheath is not opened before the veins are ligatured. Mr. Jacobson finishes the operation by removing from the scrotal skin two elliptical pieces on either side of the incision, with the purpose of still further bracing up the scrotal tissue.

Drainage for the first twenty-four to forty-eight hours is advocated by some surgeons, but I am strongly disposed to regard this as not only unnecessary, but a possible source of infection, and a distinct bar to primary union.

It has always been my custom to sew up the wound by a continuous sailor-stitch suture of horse-hair, taking great care that the skin edges are evenly apposed, and putting in many stitches.

Before closing the wound, it should be swabbed out with one to twenty carbolic, which should immediately be taken up by a dry sponge passed round the wound. The strong lotion has an immediate bleaching effect upon the tissues, while I have never seen any harm come from it.

When the skin wound is closed, the line of incision is brushed over with absolute alcohol, and then a twofold strip of blue gauze is pasted on with collodion, a firm pad of blue wool is fixed over the wound with a T-bandage, and the operation is complete.

Unless there is some special reason, the wound should not be dressed for a week, and the stitches should be removed on the ninth day. The patient should not be allowed to walk until the seventeenth day. The success of these operations depends upon the strict carrying out of details, and it is for that reason I have gone rather minutely into them.

The following table shows the number of operations performed for varicocele at St. Bartholomew's Hospital during the five years from 1889 to 1893, inclusive:

		Operation.		Suppuration.			Reason.	
Year.	Cases.	Open.	Subcutaneous.	Open.	Subcutaneous.	Average age.	Pain.	Services.
1889	19	11	8	7	0	22	13	6
1890	17	10	7	6	1	21	12	5
1891	11	8	3	4	1	20	7	4
1892	21	15	6	2	1	21	10	11
1893	39	15	24	3	0	23	20	14

All the varicoceles, with one exception, occurred on the left side.

CLINICAL LECTURES.

FORMS OF PARALYSIS IN CHILDREN.

CLINICAL LECTURE DELIVERED AT THE UNIVERSITY OF PENNSYLVANIA.

BY J. P. CROZER GRIFFITH, M.D.,

Clinical Professor of the Diseases of Children.

GENTLEMEN,—I want to take up with you to-day the subject of the paralyses of children, and show you a series of illustrative cases. The subject is a large one,—far too large to be considered in the time which we shall have to give to it. We shall, therefore, study only those forms of paralysis which are most frequent or most characteristic, and which we are most apt to meet with, not in the capacity of neurologists, but in our general practice among children.

We could study these from various points of view. For instance, we could talk of the paralyses occasioned by lesions of different parts of the nervous system. In this way we could speak of those due to diseases of the brain, the spinal cord, or the nerves. On the other hand, we might take up the individual symptoms and, reasoning from what we know of the anatomy and physiology of the nervous system, try to find just what these symptoms mean. I propose that we take up the study of the subject very briefly in both ways.

There are, of course, various forms of genuine paralysis which we shall not have time to consider; just as we must omit the many diseases which, while simulating paralysis, are not really this from a medical stand-point. There are, for instance, certain forms of ataxic disease in children which produce apparent loss of power, although they are not paralysis in any true sense of the word. Again, there are mixed forms of paralysis in which the symptoms characteristic of one type are united with some of the symptoms of another type, because there is present a combination of the pathological lesions of the two. These also we must omit. If we understand fully the typical cases we can better come to some conclusion regarding the mixed forms. Finally, we must remember that any variety of paralysis shows symptoms which vary somewhat with the stage of the disease. Our time is too short to consider all these variations, so we must limit ourselves chiefly to some of the characteristic symptoms as exemplified by the different forms of palsy in their most characteristic stages.

Suppose, then, we take up, first of all, the *paralysis due to some dis-*

order of the brain. I show you as a case in point this little colored boy, Morton N. His history is briefly as follows:

There does not seem to have been anything in the family history which accounts for his present condition. His mother, it is true, was subjected to a sudden fright, and had some hysterical spasms while she was pregnant; but it would appear that she is liable to attacks of this sort. She did not suffer from any other affection during pregnancy. This child is her fifth; there have been no nervous diseases occurring in any of them, and she has had no still-births. The little patient was very much constipated until he was four months of age, and as a result of this frequently suffered from convulsions. In other respects he was well until eleven months old, at which time he suffered for three weeks with fever and cough, a physician who saw him diagnosing the case as one of influenza. When he became convalescent, but had still a severe cough, the mother (according to her statement), while rubbing the child's chest one morning with camphorated oil, as directed by her physician, noticed that his right hand fell helplessly to his side, and, upon examining him more carefully, discovered that his right leg also was helpless. She says she is positive he had no paralysis before this. It does not appear that any convulsion had occurred at this date. Up to this time he had learned to say "mamma" and "papa," but now ceased to learn any more words, and was eighteen or twenty months old before the acquiring of speech progressed any further.

From the age of eighteen months he has been gaining power of speech slowly, and now speaks fairly well, and the paralysis also has improved.

As I examine the little boy before you, you notice that he walks with a scarcely noticeable affection of his gait. Close observation, however, will show you that the right foot does not move as well as it should. It does not actually drag, but seems to keep too close to the floor. Indeed, were the leg the only part affected, we should scarcely notice anything wrong. When, however, you examine his hand, you will see that the forearm is held in a pronated position, the fingers adducted, and the thumb with a tendency to flexion into the palm. The muscles, as you notice, are quite firm,—in fact, almost too much so,—and there is very little atrophy, although the arm, as a whole, is somewhat smaller than that of the other side. He uses this arm, we are told, very little.

Let me read you the incomplete notes of another case of the same disease which I saw in the Children's Hospital a few years ago.

"Rosie G., aged two and a half years, has been weak since birth, especially in the left side. She does not talk at all and cannot walk, and the left side is found on examination decidedly paretic. The mother states that she seems bright otherwise, but the examination shows her face to be dull and stupid-looking. The left arm and leg are stiff, and are held in a contracted position. The left knee is flexed, and the foot of this side is kept behind the right foot. The forearm is in a position of strong pronation. The child seems perfectly well in every other respect. The knee-jerks seem to be unaffected, but the test is unsatisfactory. There is no wasting of the legs. The intellect is apparently much impaired. Electrical examination shows that there is no diminution of the faradic contractility and no reaction of degeneration."

Now, gentlemen, these are cases of cerebral palsy. Sometimes they are called birth palsies; but it would be a mistake to name every birth palsy a

cerebral palsy, just as every cerebral palsy is not a birth palsy. Many of them are due to injury to the brain produced during birth. If you will look carefully into the history of cases of this kind, you will often find that the child has been the first one, and that the labor has been unusually difficult and prolonged. In other instances instruments have been used. In still other cases we may find that other children of the family have also had brain affections of some nature, or that there have been still-births, indicating that the mother had an abnormally small pelvis. The cause of the paralysis is, of course, the great or long-continued pressure upon the brain substance. The brain of a baby is very soft, as can easily be seen at any post-mortem examination. The vessels, too, are very easily ruptured. The long-continued pressure produces a venous stasis, which is followed by meningeal hemorrhage, that may be widespread over the convexity of the brain. Sometimes a true arterial hemorrhage takes place, but this is very unusual; and sometimes there are numerous minute hemorrhages scattered through the brain substance.

In other cases the palsy is not really a birth palsy. The pathology is, of course, the same,—viz., hemorrhage. The commonest cause in these post-natal cases is the occurrence of convulsions. Thus we find whooping-cough, with the convulsions which frequently attend it, or one of the acute febrile diseases, so often ushered in by convulsions, followed in many instances by cerebral palsy. The repeated convulsions, of course, produce a tremendous venous stasis in the brain, and as a natural result hemorrhage occurs. We are sometimes disposed, in learning the history of these cases, to view the convulsions as the result of the brain lesion, and this is true in some instances; but much oftener the converse is the case. In still other instances we have the history of a fall. One little child, whose case I had the opportunity of studying some years ago, fell down a flight of stairs, and the circumstances were such that it was very difficult to determine whether the fall had produced hemorrhage, or a sudden hemorrhage had produced unconsciousness, which occasioned the fall.

The symptoms depend upon the position and degree of the brain-lesion. There usually is paralysis, just as there would be in hemiplegia in the adult; or, if the hemorrhage is bilateral, we may find a diplegia resulting. In some cases paralysis is absent or slight, and it is the intellectual power which is particularly involved. Very often the symptoms are overlooked until long after they are actually present. This is especially true in the case of the palsies which occur during birth. As the baby grows older it is noticed that it does not begin to walk, or does not use one arm as well as it should, or that it does not learn to talk well. As time passes it is seen to be, perhaps, clearly deficient in mental power. Examination may show that there is a decided stiffness of the affected limbs. The knee-jerk is increased, the arm is held stiff and pronated, the wrist often flexed. As the child learns to walk the foot of the affected side is dragged stiffly upon the floor as if the toe were fastened to the ground. The gait is not the peculiar one of some of the

spinal palsies, in which the leg is *thrown* from the side as if it were a dead weight, but it is the characteristic "spastic" gait. If both sides of the brain have been affected we find, of course, both legs, and it may be both arms, involved. It is in such cases that we have the peculiar cross-legged progression which was formerly described as evidence of a primary disease of the spinal cord. In this cross-legged progression the foot of one side is extended forward and across the position of the other foot, so that when the child with blackened soles is allowed to walk upon some white surface, a very peculiar series of footprints is produced.

Of course much the same set of symptoms follows the cases where paralysis has been produced by lesions of the brain occurring after birth. In such instances a child who has learned to talk either forgets the words which it has already acquired or ceases to learn any more. It seems as though the advancement of the intellect had stopped short,—as though there were an arrested development of the brain.

We may not always succeed in getting the increased knee-jerk which is a symptom of this form of paralysis, unless the tendency to spasm is quite marked. Many children hold their legs very awkwardly and stiffly during examination, if they have any power over them at all, and thus interfere with a satisfactory study of their condition. In other cases, as in the little boy I have shown you, recovery of the leg has been so complete that increase of the knee-jerk can no longer be obtained. At the very beginning of the paralysis the knee-jerk is lost, just as it is in apoplexy in the adult.

I would call your attention to the fact that in palsies of this nature there is no very marked atrophy of the affected parts. The child whom you see, although having an arm which is of little use, shows no decided atrophy in it. The paralyzed limb, it is true, grows more slowly than the one of the opposite side, and is generally smaller and shorter, but there is no distinct wasting. It is a fact worth mentioning in this connection that the leg generally recovers sooner and more entirely than does the arm. So, too, the tactile sense is seldom much affected, if, indeed, it is not entirely normal.

A word about electrical reactions. You hear a great deal about the reaction of degeneration. In simple language we may say it means merely that if we put the positive pole of the galvanic current over the affected muscle, and the negative on any indifferent point, we get a degree of contraction which is as great as or greater than that obtained when we put the negative pole on the muscle. It is the reverse of the condition of the normal muscle, in which the contraction occurring with the closing of the current and with the negative pole on the muscle is decidedly the greater.

You will notice in the history of the second case that there was no reaction of degeneration, and that the faradic contractility was not diminished. We may set it down as a positive rule that when the faradic contractility is unaffected there will be no reaction of degeneration. If you

can remember this it will be a great help to you. It is not necessary to test the galvanic contractility when you find that the faradic contractility is unimpaired.

I will not now discuss the reasons of any of these symptoms, because I want to take that up with you a little later. I have been able, as you see, to give you only the briefest review of paralyses of this nature. If you will examine the little table of symptoms which I have placed upon the board (see table), you will be able to regard, in brief, the principal symptoms of the cerebral palsies and of some of the other forms compared.

		Onset.	Atrophy.	Muscle-tonus.	Tactile Sense.	Farad.	R. of D.	K.-J.
Brain	Cerebral palsy.	Sudden.	—	Stiff.	N.	N.	O.	+
Spinal cord . .	Pott's disease.	Chronic.	+	Flaccid.	O. or —	O.	P.	O.
			—	Stiff.	N.	N.	O.	+
	Anterior poliomyelitis.	Acute.	+	Flaccid.	N.	O.	P.	O.
Nerve	Neuritis.	Subacute.	+	Flaccid.	—	O.	P.	O.
Muscle	Primary myopathy.	Chronic.	+	Flaccid.	N.	—	O.	O.

+ = marked or increased. — = slight or diminished. O = absent. N = normal. P = present.

I must say about the table, in this connection, that it represents the symptoms of the different palsies in the stage in which you will most commonly meet with them in your practice. Some of the earliest or latest symptoms may differ from these for various reasons.

Now let me show you this little child, who is another instance of birth palsy, yet of a totally different nature from the case of Rosie G., whose history I have read you. It is, in fact, an instance of *paralysis due to neuritis*. The history, as taken eighteen months ago, when she was but five weeks old, is, briefly, as follows. I have not seen her since until the present time:

"Rosie B., aged five weeks, has been unable to use her right arm since birth. She can move her fingers and is gradually getting some power over the forearm, but the muscles of the upper arm and of the shoulder seem to be totally useless. The birth was difficult, and considerable traction was required to deliver the shoulders. It would appear, however, that the head was born without trouble. There is no affection of the legs, and the child is well in other respects. There does not seem to be any wasting in the affected arm. The electrical examination reveals diminished faradic contractility in the right arm; increased response to the galvanic current, and the anodal closing contraction greater than the cathodal closing contraction."

This is, as you see, the reaction of degeneration. We have a greater contraction when the circuit is closed with the positive pole on the muscle

(anodal closing contraction) than we have with the negative pole upon it (cathodal closing contraction). Had it not been for the electrical examination, the diagnosis of this case would have been less easy. I might have supposed that it was a case of cerebral palsy from a lesion of the arm centre; but, as I have just told you, palsy of this nature does not show the diminution of faradic contractility or any reaction of degeneration. The case really was one of "birth neuritis" following injury to the nerve during birth. I have no doubt that the traction used upon the shoulders, whether by a blunt hook or by the finger of the accoucheur in the armpit, injured the nerves of the arm in some way. It was, of course, impossible to determine much about the sensation at so early a date, and the fat upon the arm concealed any muscle-wasting present. As I examine her now before you, I find that she has regained to a very great extent the power of her arm, although she still makes chief use of that of the other side. The arm is not at all stiff; there is no tendency to pronation, as there was in the first case; the thumb is not drawn towards the hollow of the hand, and the wrist is not flexed. All these symptoms would be present were the case one of cerebral palsy. The prognosis in these cases of localized neuritis is, on the whole, fairly good, although uncertain in any individual case. It is certainly better than in cases of cerebral paralysis.

Neuritis in children is, of course, only very exceptionally produced by trauma of this sort. Probably the most frequent form in childhood is that which sometimes follows an attack of diphtheria, developing oftenest in the third to the fifth week from the onset of the disease. Generally the palsy is limited to the muscles of the throat and of the eyes, and we have as a result difficulty in swallowing, a nasal voice, and squint, perhaps with ptosis. I have shown you cases of this nature on previous occasions. Sometimes, but less often, the palsy is widespread. The prognosis of diphtheritic neuritis is, on the whole, very good, although recovery is often tedious.

Very widespread neuritis, due to other causes and going under the name of "multiple neuritis," is often seen in adults, but is of so unusual occurrence in children that most text-books fail to make reference to it. I want to read you the notes of a very interesting case which I saw some years ago, and which I think must be assigned to this category:

John T., nine years old, had been an inmate of a farmer's family, and had been perfectly healthy. The history of the beginning of his illness is rather indefinite, but it would appear that he had been engaged in farm-work, carrying wood for the house-fires and doing other chores, and that he had been exposed considerably to cold. Two or three weeks before I saw him he began to drag his feet and to suffer from pain in his thighs, at the same time commencing to talk slowly. The pain in the legs was severe enough to waken him at night. He also had pain in his shoulders and arms. He suffered from earache at first. The weakness of the legs gradually increased, his back grew weak, and he was unable longer to carry the wood as he had been accustomed to do. His back hurt him when he tried to lean over. Finally he lost much of the power in his arms also.

On examination he was found to have quite a marked bronchitis. His face had

a heavy, stupid expression, but was of good color. Speech was slow and hoarse, but talking did not cause pain. The shoulders and elbows were somewhat tender on pressure, but were not swollen; the hips and ankles were slightly sore, the calves and thighs very tender, and forcible dorsal flexion of the foot hurt his calves and made him wince. The patellar and ankle reflexes were totally abolished, as were the plantar and cremasteric reflexes. The arm reflexes could not be developed. The tactile sense as tested by the points of pins was good in both arms and legs. He could not tell if his toes were being bent, but he knew where his legs rested in the bed. He could not lift his legs from the bed or sit up. He could lift his arms, but with a decided tremor. His grip was weak; he could not easily touch the finger of the two hands together even when his eyes were open. He said that at first he had a feeling as of needles in his hands and feet, but had it no longer. He complained of a sensation as of crumbs in the bed. He let his head fall as though he could not well hold it up. The muscles of the face moved properly, except that the forehead could not be wrinkled. The pupils always reacted well to light.

The child was under observation for four months. For a time the paralysis steadily increased until he became almost totally helpless. Even swallowing grew very difficult, and he was scarcely able to talk or to cough up the mucus which attended his severe bronchitis; this seeming to indicate that the respiratory muscles shared in the paralysis. For days death seemed to be threatening from paralysis of respiration and deglutition. Sometimes speech was very indistinct. On one or two occasions he had slight convulsive seizures. After three months he had improved remarkably, and was able to sit up in bed, though his legs were still greatly paralyzed, and he could not lift his feet and had scarcely any power in his hands.

Four months after he was first seen he was running about. The legs and arms appeared to have nearly normal power, but were slightly ataxic, especially the upper extremities. There was not much wasting. The patellar reflex was still absent. He made at last a complete recovery.

I would call your attention for a moment to the symptoms of neuritis as illustrated by this interesting case. Especially note the comparative slowness of the onset as compared with that of some other forms of paralysis, and the fact that there often is a great deal of pain with disturbances of sensation which come under the name of "paræsthesia." This boy, for example, had at first severe pain and the sensation of needles sticking him, and later that of fine crumbs in the bed. These symptoms are almost peculiar to this disease. We notice, further, that there was no stiffness of the limbs, such as occurs in cerebral palsies. Of course, late in many forms of paralysis there develop contraction and stiffness about the joints, but I do not refer to that when I speak of the general stiffness or increase in "muscle-tonus," as I have called it in the table. We observe, also, that there was in this case perfect tactile sense, although the muscle sense was slightly impaired. In the majority of cases of neuritis the tactile sense is somewhat diminished, and sometimes very greatly so. I regret that the electrical reactions were not tested. It is almost certain that they would have shown that the faradic contractility was diminished, and possibly that the reaction of degeneration was present. The knee-jerk was entirely gone, as, in fact, were all the other reflexes. In all forms of neuritis affecting the lower extremities there is loss of the knee-jerks. In this case there was

some wasting of the muscles, but not to the extreme degree which is sometimes seen in neuritis.

Before we pass to the other forms of palsy, look for a moment at this little boy, who would appear to have been another instance of neuritis, although of slight severity. Until to-day I have not seen him since February, 1892. The history of his illness taken at that time is as follows:

"Fred. B., four and a half years old, had measles a year ago, and during the past summer had mumps. One week ago his neck became stiff, and he was confined to bed; his mother noticed, also, that he could not walk well. There were slight pains in both the legs and the knee-joints. On the first day of the illness he tried to get up, but could stand only by holding to a chair. Every morning he seemed rather better, but on attempting to leave the bed both the legs and the neck grew worse. He improved enough to allow him to come to the dispensary of the hospital the last of December, 1891. He was placed upon antirheumatic treatment, but after nine days had not improved. His gait was feeble and unsteady; he was unable to follow a straight line; his knees shook, and there seemed to be decided evidence of paralysis of the lower extremities. Two weeks after this his neck had nearly recovered, and his gait was much better, although still slightly waddling. I noticed on this occasion that the knee-jerks were gone, but that the tactile sense was preserved. His thighs were so sensitive that the child cried when they were pressed. There were no specially tender points. He could rise from the floor only with the aid of a chair. The antirheumatic treatment was continued, as was the liniment which had been employed for some time. By January 29 his neck was quite well; his gait had much improved; there was slight tendency to in-knee; he could rise from the floor rather more easily. On February 5 he was still improving, and on this date I had his electrical reactions tested by the physicians in charge of the dispensary for nervous diseases. They reported that the slowly-interrupted, weak, faradic current showed some lack of response in the gastrocnemii and solei muscles."

In the case of this boy we have to do with what could scarcely have been anything else than a neuritis of rheumatic origin; while in that of John T. also exposure to cold seems to have been the cause, and his neuritis may properly be called rheumatic. Freddie is now all right, as you see. His mother tells us that he very soon recovered entirely and has been well ever since. He exemplified the tenderness on pressure, pain, ataxic gait, absence of knee-jerk and diminution of faradic contractility. His recovery, as well as that of John T., illustrates the comparatively good prognosis which neuritis gives. It is certainly on the whole much better than is that of other forms of paralysis.

The next case which I will show you is one of an entirely different type. We have discussed very hurriedly some of the brain palsies of children, and have touched briefly on the nerve palsies. This child illustrates one of the varieties of *spinal paralysis*. I will give you a synopsis of his history.

Frank S., eleven years old, had a fall in 1892, and as a result developed a curvature of the spine. This became slowly more marked, with increasing paralysis of the lower extremities, sometimes with temporary improvements followed by relapses, until there is now nearly complete paraplegia. He wore a plaster jacket early last

summer, but it made him sore in places, and it was taken off. He felt better as a result, but his paralysis grew still more complete. His legs are somewhat wasted, and he is unable to move them at all. Occasionally, however, they draw up of themselves. The knee-jerks are greatly increased, and ankle clonus is marked. Tactile sense is not affected. He has not suffered much pain.

This is a case, as you see, of *Pott's disease of the spine.* I wish to speak of it from the side of the paralysis only, not from its surgical aspect. It is, unfortunately, one of the common forms of paralysis in children. The lesion is that of compression of the spinal cord. It is conceivable that the giving way of the vertebræ might produce a direct compression of the cord, but the truth is that the commonest condition is that of compression resulting from inflammation and thickening of the meninges rather than from any interference by the bones themselves. The symptoms produced are very characteristic. We must remember that we have two groups of symptoms,—those which depend on the lesion of the segment of the cord affected and of the nerve-roots issuing in the vicinity, and those which depend upon the condition of the spinal cord below the seat of lesion,—and that these differ very greatly. If you look for a moment at the table you will see that I have made two lines to designate these two groups, the upper one representing the first class of symptoms, and the lower the second class. The most apparent symptoms are those of the second class,—namely, those in that part of the body not controlled by the portion of the cord actually compressed. This is the case because the curvature is most frequently found in the dorsal region, not involving that part of the cord from which the nerves of the legs take their origin. You will notice, first of all, that the onset is chronic. There is a slowly-increasing loss of power, accompanied by stiffness in the legs with increase of the knee-jerk. There is often considerable pain in the legs, but a principal seat of pain is in the parts which are supplied by the nerves coming from the seat of injury. These parts are also atrophied, although that is not always easily discovered. There is also here at first distinct hyperæsthesia, but finally anæsthesia. The faradic contractility is lost, and the reaction of degeneration is present. Were the lumbar enlargement involved, we should find that the knee-jerks were absent.

On the other hand, in those parts which are controlled by the cord below the seat of lesion we find the second group of symptoms,—viz., no great atrophy, a rigidity of the muscles, generally not much affection of the tactile sense,—if, indeed, there be any,—and the same condition of knee-jerks and electrical reactions which is present in the case of cerebral palsy. As I said, most cases of Pott's disease show in the legs the symptoms last described, because the seat of disease is above the lumbar enlargement of the cord.

We have now another form of spinal palsy to take up, very different from that we have just considered. I refer to that dependent upon *acute anterior*

poliomyelitis; and the little child which I show you is a good instance of that disease. I will read his history.

John B., aged, when I saw him in May, 1893, two and a half years. His mother brought him to the Children's Hospital, stating that his right foot turned out when he walked, and that he fell very easily. He did not seem to stumble, but his feet gave way. The affected leg, on examination, was found to be wasted slightly and decidedly more flabby than the leg of the other side. The knee-jerk was absent on the right side. His condition was first discovered when he was one year old. He was stated to have had "congestion of the brain" at the age of six months. At that time he lay powerless, and could move neither hand nor foot; was feverish, but had no convulsions.

The case seemed a very clear one. It would have been interesting if electrical examination could have confirmed the diagnosis. Faradic contractility would probably have been diminished; but so long after the onset the reaction of degeneration could not be expected.

I bring him before you now after an interval of eighteen months. You will observe that he has worn braces upon each leg. I will take off the braces so that you may see how he walks without them. Notice that the toes of the right foot turn out much too far, and that the gait is a very characteristic one. He *throws* his foot. He does not scrape it along the ground as though it were stiff, but brings it around in a curve from behind him towards the side, as though it were a dead weight which had little actual power in itself. The muscles, as you see, are soft, and the leg flaccid, with a total absence of any rigidity such as was seen in the last case which we discussed. He has improved decidedly since I first saw him, but is by no means well yet. The fact that he has had a brace fitted to the left leg also makes it appear probable that there has been slight paralysis in this leg as well, although it was not evident when he was first seen.

This affection—anterior poliomyelitis—is, unfortunately, a common one in children. Four-fifths of all the cases develop in the first three years of life. Its cause is unknown. It was at one time supposed to be the result of cold, but statistics now show that it is more frequent in warm weather than in the winter-time. It has been observed to follow such infectious diseases as measles, scarlet fever, typhoid fever, etc., but there is no real evidence that these have any influence whatever in its production. It has also been thought in some instances to be due to over-exertion; but this, too, seems to be rather doubtful. The fact that epidemics of it have occasionally been reported would seem to indicate that it may be itself an infectious disease, and many writers are now adopting this view of it. Its early symptoms are very obscure. The child is attacked by some febrile condition, the cause of which is not evident. There is no marked pain. Sometimes there are convulsions, but this is not the rule. The physician in attendance is unable to tell what is the matter until, after a brief interval,—a few hours to a week,—it is noticed that the little patient is paralyzed. The paralysis is generally on both sides of the body, though usually more marked on one

than on the other, and generally more severe in, or entirely confined to, the lower extremities. It becomes complete within a few days. Then for two to eight weeks it remains stationary. During this period the paralyzed limbs are as limp as a flail, to which they are very often compared. All the reflexes are lost. The sensation is not usually materially affected, so far as we are able to determine it. Electrical examination at this time shows that the faradic contractility disappears in about seven or ten days from the onset, while the galvanic contractility is increased, and the usual symptoms of the reaction of degeneration are present. Improvement now begins, and goes on during several months. Finally, those muscles or muscle-fibres which are destined to recover do so; but the others undergo atrophy, and contractions, especially of the ankle-joint, develop and produce varieties of club-foot. In bad cases the paralyzed limb becomes very much wasted; it is cold, the skin is often mottled, and chilblains frequently develop. There is even an arrest of the growth of the bone. If you glance at the symptoms of this disease, as shown in the table, you will find particularly marked the facts that the onset is acute, the atrophy decided, and the tactile sense unaffected, and that the electrical reactions are exactly the reverse of those seen in cerebral palsy. The prognosis of these cases is dubious. Recovery generally follows to a considerable degree, but more or less of the trouble is apt to remain through life. The pathology of the affection we can consider better presently.

We have now to study the last form of paralysis in children,—namely, that due to a *primary disease of the muscles.* There are various varieties of this, all more or less closely allied. We may classify them all as primary myopathies or primary muscular dystrophies. To go into an extended discussion of them is impracticable in our short time. One of the most marked forms is that which is often called pseudo-hypertrophic muscular paralysis. In this affection there is, at first, an apparent overgrowth of certain of the muscles of the body, particularly the infraspinati and those of the calves. We find, however, that certain other muscles are distinctly atrophied. This is especially true of the latissimi dorsi, and, as a result, the posterior folds of the axillæ are absent. The onset of this affection is very peculiar. The first symptom noticed is a progressive loss of power in the lower extremities. The child walks awkwardly, with a strangely waddling gait, and frequently falls, particularly when trying to go up-stairs or to take any step upward. The great peculiarity of the affection is that, in rising from the floor after a fall, the child, as it were, climbs up its own legs,—that is to say, it can rise only by placing its hands first on its ankles and then gradually moving them farther and farther up the legs, first to the knees and then to the thighs, until at last it raises itself into an erect position. This symptom is due to paralysis of the extensors of the hips and knees. These symptoms lead us to examine the muscles, and then, as I have already said, we may be struck by the very large size of the calves.

In another form of primary myopathy, we find the muscles of the face,

shoulder-girdle, and upper arm particularly involved. This is the one described as the facio-scapulo-humeral type of Landouzy and Déjérine. In this form the face has a very peculiar aspect, for the paralysis renders the child unable to smile. Other forms of the disease have been described by Erb, Leyden, and others. They are all, as I have said, closely associated; and often the pseudo-hypertrophic form terminates eventually in very great atrophy. I show you photographs of a young man of sixteen or seventeen, who had at first been an instance of this pseudo-hypertrophic form, but who, as you now see, was at last wasted almost to a skeleton. At the time of his death he was unable to move hand or foot. This photograph of another case shows the early stage, with the decided hypertrophy of the calves.

The cause of primary muscular atrophy is unknown. Very often there is a distinct hereditary influence present, and several children in one family may be attacked; but beyond this we know nothing with certainty regarding its etiology.

What, now, are the distinguishing symptoms of this affection which separate it from the other forms of paralysis? We notice the very chronic onset, which separates it sharply from the others, except that due to Pott's disease. With this latter it can hardly be confounded, since we do not have rigidity and the spasm-symptoms that accompany the spinal affection. Then, if we notice the last four columns in the table, we find an association of symptoms which is present in no other form of palsy. We observe, namely, that although the tactile sense is normal, as it is in poliomyelitis, and although the faradic contractility and the knee-jerk are diminished or often absent, as in this disease, yet we have no reaction of degeneration. Cases have been described where the reaction of degeneration was present, but these are not pure instances of muscle palsy. I must say again, as I have said before, that we are now talking only of typical instances of the various palsies, and that we shall find at times cases which exhibit unusual symptoms.

Now let us take up briefly the second method of study. We have examined, first of all, the different paralyses as distinct diseases and compared their symptoms. We may now study the individual symptoms and try to learn the *reasons why* these symptoms are present,—that is to say, we may consider the diseases from a pathological stand-point.

Anatomically the motor paths in the brain, cord, and nerves are sometimes divided by writers into the upper and the lower segment. The upper segment consists of the cortical ganglion cells and the nerve-fibres passing from these in the spinal cord down to, but not including, the ganglion cells in the anterior horns of gray matter. The lower segment includes these cells, the nerves, and the ramifications of these in the muscles. A lesion which occurs anywhere in the upper segment usually has symptoms which are very distinct from those of a lesion occurring in the lower segment. Bearing this in mind, and remembering what symptoms are produced by

what lesions, it is comparatively easy for us in uncomplicated cases to determine the position of any individual lesion, and the nature of the disease which corresponds with it. This is far easier, as well as more scientific, than trying to memorize certain symptoms as characteristic of a certain disease.

Let us, then, take up some of our main symptoms as shown by the table.

First of all, *atrophy*. Atrophy depends upon some lesion which interferes with that part of the nervous system governing the nourishment of muscles. As you know very well, the large trophic cells in the anterior horns are the ones upon which the condition of the muscle depends. If, now, these cells are destroyed, as they are in poliomyelitis, we must necessarily have an extensive atrophy produced,—as is the case in this disease. An inflammation of the nerve, however, produces the same result, simply because it cuts off communication between the muscle and these cells. Consequently neuritis also gives us very decided atrophy. As I told you, marked atrophy in Pott's disease occurs in typical cases only in those muscles which are supplied by the nerves coming from the compressed portion of the cord. Here it depends either upon the involvement of the nerve-roots producing neuritis, or upon a transverse myelitis which affects the anterior horns as well as other parts. If we see decided atrophy in other portions of the body in this disease, we know that the anterior horns of the lower part of the cord have been secondarily affected. Finally, the atrophy of the primary muscle palsy is the result of the primary muscle disease; for the anterior horns and the nerves are normal in this affection,—at least in uncomplicated cases. To distinguish the atrophy of poliomyelitis from that of neuritis we must study the other symptoms, especially the mode of onset, and the presence or the absence of pain and paræsthesia. To distinguish that of primary myopathy we look especially to the very slow beginning and to certain of the other symptoms presently to be referred to.

Let us now take up the column which I have labelled *muscle-tonus*,—that is to say, the tonicity, or the condition of stiffness or flaccidity, of the limb. With this we may also consider the *knee-jerk*. Here again we must study our anatomy. When a lesion of the motor centres of the brain takes place, as it does in cerebral palsy, we have developing a secondary descending degeneration in the fibres which pass from these centres through the brain and into and down the spinal cord. These fibres constitute, as you know, the pyramidal tracts, and it is by means of them that the motor impulses are conveyed from the brain to the nerves going from the spinal cord. When the restraining control of the brain is cut off by any degeneration of these pyramidal tracts, whether this is due to a primary lesion of the brain or to a primary lesion of the cord itself affecting these tracts, we have produced an excessive and ungoverned action of the muscles. This shows itself by extreme muscular irritability,—seen, for instance, in excessive knee-jerk, or in ankle-clonus, or in a tendency to rigidity, all of which we may designate as *spasm symptoms*.

What, now, will produce spasm symptoms? First of all, of course, meningeal hemorrhage or other brain disorder, as illustrated by the cerebral palsies of children. Here we have a marked rigidity of the muscles, as I told you when reviewing the symptoms. Suppose, again, that we have a transverse myelitis in the dorsal region produced by the presence of Pott's disease of the spine. We have developing, as a result of this, a descending degeneration in the pyramidal tract below the point of compression. The symptoms are, of course, the same as in cerebral palsy,—namely, increased rigidity and stiffness of the muscles and increased reflexes, shown particularly in the knee-jerk. As you will notice, then, spasm symptoms indicate a lesion of the motor centre or of the pyramidal tracts. Spasm, therefore, depends upon lesion of the upper segment of the nervous system, just as atrophy depends upon lesion of the lower segment; and by carefully bearing this fact in mind you will have less difficulty in determining where a lesion is situated. Both cerebral palsy and that of Pott's disease exhibit spasm symptoms; but to distinguish between the two affections is a very simple matter in nearly every case. You have noticed already the differences in the onset. So, too, the portions of the body which are paralyzed are different. In the first the paralysis is more often hemiplegic, while in the latter it is paraplegic. The whole history is entirely different in the two diseases.

Next we come to the study of the *tactile sense* to see if we can tell why it is normal in some forms and affected in others. It is, as you notice in the table, normal, or nearly so, in everything except neuritis and the root symptoms of Pott's disease. In neuritis it is generally only diminished, not usually entirely absent. This is because the sensory portion of the nerve is generally not entirely destroyed. In the root symptoms of Pott's disease the loss of sensation is dependent very probably on the compression of the sensory nerve-roots by the inflammatory tissue. It is easily comprehensible why it should be normal in other affections. Thus, in anterior poliomyelitis it is only the motor region of the cord which is affected; consequently we have no disturbances of sensation. So in cerebral palsy it is usually only the motor portions of the brain and their continuations in the cord which are involved. In the primary myopathies we have only the muscle affected, and not the nerve which conducts sensation.

Finally, let us take up the *electrical reactions.* The reaction of degeneration indicates disease of the lower segment of the nervous system,—that is to say, either the nerve primarily or the anterior horn and the nerve secondarily must be involved in order to produce it. The term "degeneration" means *nerve* degeneration, for disease of the trophic ganglion cells in the horn will rapidly be followed by degeneration of the nerve. The loss of nerve control which this degeneration occasions renders the muscle peculiarly irritable to the galvanic current, so that it reacts in a peculiar way. If, then, we should find in the early months of a paralysis that the reaction of degeneration is absent, we say, "at least the lesion is not in

the lower segment." Cerebral palsy, as you see by the table, shows no reaction of degeneration, nor does the compression myelitis of Pott's disease, except in those muscles governed by the nerves which are compressed or which come from anterior horns affected by compression myelitis. With the reaction of degeneration goes a loss or diminution of faradic contractility; for the same degeneration of nerve which produces the former interferes with the carrying of the electrical current to the muscle.

There is one form of paralysis, however, in which faradic contractility may be diminished from the beginning, because the muscle has lost its power to contract. This is the condition in the primary myopathies. Here our electrical reactions will confirm our diagnosis. There is at no time reaction of degeneration, because the nerve is not degenerated. There is lessening of faradic contractility, because the muscle is not healthy. The diminution or loss of faradic contractility and the absence of excessive knee-jerk show that the disease is not in the upper segment of the nervous system. The atrophy would indicate that it might be in the lower segment; but absence of any reaction of degeneration shows us that it cannot be there. Consequently, by exclusion we are compelled to adopt the view that we have to do with a case of primary muscular atrophy.

Of course, in the advanced stages of an atrophic paralysis we fail to get electrical contractility of any kind, because the muscle is too much wasted to respond to any stimulus.

I hope that I have made this clear to you. To recapitulate very briefly, then, there are the two segments of the nervous system governing these various forms of palsy, and, in addition, the primary muscle-palsy which is removed from the control of either of them. The presence of spasm symptoms and the absence of atrophy indicate disease of the upper segment. Absence of knee-jerk and of other spasm symptoms, and presence of atrophy indicate disease of the lower segment. Normal faradic contractility, with the absence of reaction of degeneration, indicates disease of the upper segment; loss of faradic contractility, with the presence of reaction of degeneration, indicates disease of the lower segment; loss or diminution of faradic contractility, with loss of knee-jerk, absence throughout the case of reaction of degeneration and absence of spasm symptoms, indicate disease of the muscle.

I must once more emphasize the fact that what I have said to you is intended only as a guide and not as an absolute rule. Were all cases of palsy as easy to recognize as my words might indicate, the study of them would lose much of its charm. But what I have told you will, I hope, enable you to take up this subject in an intelligent manner, with some idea of what the ordinary symptoms of these common palsies are and how they are produced, upon what anatomical lesions they depend, and why these anatomical lesions must necessarily be associated with certain symptoms.

THE DIAGNOSIS AND TREATMENT OF ACUTE PHTHISIS.[1]

CLINICAL LECTURE DELIVERED IN THE CHARITY HOSPITAL.

BY PROFESSOR POTAIN, OF PARIS,

Member of the Academy of Medicine; Physician to the Charity Hospital.

GENTLEMEN,—This young woman, who came into our service two months ago, was suffering from various symptoms that made diagnosis difficult. Her family history is negative and her previous personal history without interest. After coming to Paris she felt constantly tired, lost flesh, and soon had a sore throat and a cough that persisted for some time; then a fever came on with chest oppression and a slight diarrhœa, and on entering the hospital her temperature was found to be 103.2° F., pulse 140, and respirations 40. She had pains in the limbs and back, vertigo, and headache; the tongue was dry, and the abdomen flat, with a slight sensitiveness to pressure in the right iliac fossa, and some gurgling sounds; the spleen was enlarged, measuring sixteen centimetres; the urine contained a little albumin. Chest examination gave a slight dulness at the left apex, and the respiration was somewhat weakened. The few signs of congestion were gone on the next day.

We were inclined to think this a case of acute tuberculosis, although a large number of the usual signs of typhoid fever were present. The patient was much prostrated and very dull, but it was not the complete prostration of typhoid fever, for she was irritable, crying and complaining and moving about, either on the back or curled up on the side. The abdomen was flat and very slightly sensitive to pressure, and there were no spots upon it. The stools were not offensive and their color was not the ochre color of typhoid discharges. The enlargement of the spleen of itself will not decide the question, neither will the condition of the chest; for sibilant râles, slight dulness on percussion, and weak respirations are found in typhoid, but are not characteristic of that or of any other disease. What gives such signs great importance is the fact that *they are mobile*,—this mobility of the symptoms being good evidence of acute phthisis. They are found all over the chest, moving about and showing a passing fluxion in the lungs. A study of the fever gave rather positive signs. The oscillations between the morning and evening temperatures did not increase from day to day, were irregular, and the *rise in the morning* and the *fall in the evening* were exactly contrary to the regular rise and fall of the "stairway-shaped march" of the typhoid temperature.

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[1] Authorized translation from the Journal des Practiciens by Thomas Linn, of Nice, France.

We are authorized, therefore, by the exclusion of other diseases, to make a diagnosis of acute phthisis in this case; and it is one of considerable gravity, for death has come very quickly to many such patients, or the disease has developed rapidly into chronic phthisis, which goes on to a fatal termination. This does not exclude the cure of this disease, for that does occur. A man came into the hospital last winter with a pneumonia who was thought to have been cured of acute phthisis the year before, and the autopsy showed that the lungs were full of granulations of different ages, showing that phthisis had occurred.

Our medication in these cases is simple. We give sulphate of quinine, and tannin. The first is a good antiseptic and diminishes the fever. The use of tannin, we must admit, is empirical, but it is of the greatest use in acute phthisis. Troillez ascribes to tannin the power of dispersing the tubercles in phthisis, but we think it a doubtful remedy in chronic phthisis. In the congestive attacks of the first stage it is efficacious, and this suggests its efficacy in acute phthisis. Perhaps it modifies the anatomical elements and makes them imputrescible. In a long series of experiments on rabbits, we found that those into which tannin had been injected were more refractory to injections of tuberculin than those in which tannin had not been injected. In our patient, five to six grammes per day were given, but this was found to be too much, as it depressed the strength of the patient. It is usually better to give two or three grammes a day in divided doses.

REVIEW OF MEDICINE.

MEDICINE.

IN CHARGE OF JOHN H. MUSSER, M.D.,
Assistant Professor of Clinical Medicine in the University of Pennsylvania; Visiting Physician to the Presbyterian and Philadelphia Hospitals,
AND
J. A. SCOTT, A.M., M.D.,
Physician to the Out-Patient Department of the Pennsylvania Hospital; Assistant Demonstrator of Morbid Anatomy in the University of Pennsylvania.

The Contagiousness and Control of Leprosy. (*Boston Medical and Surgical Journal*, October 25, 1894.) By James C. White, M.D., of Boston.

The contagiousness of leprosy should be proved by the history of its action upon communities and nations, by the study of its effect upon individuals, by its resemblance to other affections usually regarded as contagious, by the establishment of a satisfactory cause for the contagion, and by the history of control upon its course. Leprosy very much resembles

syphilis and tuberculosis; the anatomical lesions, while not identical, are sufficiently analogous to have been placed in one group by pathologists. The explanation of the contagion is the bacillus lepræ. The bacillus is found in abundance in all the tissues of a patient suffering with the disease, but pure cultures cannot be made.

Control of cases has produced a marked diminution in the number affected. In Norway, in twenty years, the number of cases was reduced from two thousand six hundred and seven to eight hundred by compulsory isolation of lepers. The following measures are recommended for the control of lepers in the United States: 1. Every physician should be compelled by State law to report to the nearest Board of Health the existence of a case of the disease, and neglect to do so on the part of a medical attendant or a member of the family should be a penal offence. 2. Immigrants affected by the disease should be arrested at ports of entry and along our borders and turned back to their previous homes by the authority of our National Board of Health. 3. Graded hospitals should be established by the national government in suitable insular localities, where possible, within which both suspected and confirmed cases should be confined, and to which all access should be prevented, except under proper restrictions.

Report of a Case of Extreme Hyperpyrexia. (*Pittsburg Medical Review*, October, 1894.) By James H. Murdoch, M.D.

The woman, aged twenty, was being treated for retention of urine by gradual dilatation of the urethra on every second day. Her temperature remained about normal for nearly a month after admission to the hospital. The evening temperature was then recorded as 101.5° F., and at 3 A.M. was 112°, with respirations 52 and pulse 132. A sponge-bath and tincture of aconite, gtt. i, reduced the temperature in fifteen minutes to 98.6°, but at 10 A.M. it had risen to 114°; under treatment it fell in an hour to 102°. At 12.30 P.M. it had again risen to 114.8°, but after profuse perspiration it fell to 99.6°. At 1.45 P.M. it was 119°, and at 2.30. P.M. it was 120°. These variations continued for four days, when the temperature reached the normal point and remained so. There were no outward signs of fever. The hysterical stigmata were not pronounced, and yet the high temperature was believed to be hysterical.

Diphtheria and Pseudo-Diphtheria. (*Medical Record*, vol. xlvi., No. 13.)—Park and Beebe, in an extended and most interesting article, record the results of original investigation upon this subject, and review the literature relating to the pseudo-diphtheria bacillus.

In five thousand six hundred and eleven cases subjected to bacteriological examination, about sixty per cent. were found to be true diphtheria, and forty per cent. false diphtheria. In two hundred and eighty-six of the cases examined the disease was confined to the larynx and bronchi. About eighty per cent. of these cases were found to be diphtheria, while of the

remaining twenty per cent., only fourteen per cent. were positively diagnosed as not diphtheritic. This shows that a large proportion of the cases of acute croupous laryngitis (membranous croup) are diphtheria, and it was found that they caused diphtheria in others. Careful notes were made from the examination of bacilli of the original serum-tubes in sixteen hundred and thirteen cases to determine the relation between the length of the bacillus and its virulency. The results obtained show that if the bacilli are characteristic in shape and in their manner of taking the staining fluid, no information as to their virulence can be obtained from their length. The virulence must be decided in each case by the inoculation of an animal, and even then absence of virulency in one colony does not prove that other bacilli from the same case would be non-virulent.

A study of the different bacilli found in true and pseudo-diphtheria justified the division of these bacilli into three groups, as follows:

1. Virulent Loeffler's diphtheria bacilli characteristic in growth, producing acid in bouillon. 2. Bacilli identical with Loeffler's in growth, producing acid in bouillon, but having no virulence. 3. Bacilli not having all the characteristics of the Loeffler bacilli in growth, producing alkali in bouillon, and having no virulence.

Examination of the throats of children brought into direct contact with cases of diphtheria showed that in fifty per cent. diphtheria bacilli were found, and in forty per cent. the lesions of diphtheria developed later. In one hundred and thirteen cases of pseudo-diphtheria, fourteen occurred at the same time with, or shortly after, other cases, showing possible communicability.

The following statements are made in conclusion:

1. All inflammations of the mucous membranes due to the diphtheria bacilli of Loeffler should be included under the name of diphtheria.

2. Under pseudo-diphtheria should be included all inflammations of the mucous membranes which simulate true diphtheria, and which are due to streptococci or to other cocci.

3. The name croup, or membranous croup, should be regarded as a term indicating merely that the location of the pseudo-diphtheritic, membranous, or exudative lesion is in the larynx.

4. The examination of cultures upon solidified blood-serum, under the conditions insisted upon by the department, forms a reliable method for determining whether the diphtheria bacillus is present or absent in the throat.

5. Virulent diphtheria bacilli were apparently present in about one per cent. of the healthy throats in New York City at the time of examination.

6. The bacilli found in the original serum cultures, which in appearance and staining are identical with the typical Loeffler diphtheria bacilli, may be regarded for diagnostic purposes as virulent diphtheria bacilli.

7. All bacilli which are identical with the virulent Loeffler bacilli morphologically, biologically, and in staining with reagents, should be classed

with the diphtheria bacilli, whether they have much, little, or no virulence when tested on guinea-pigs.

8. The name pseudo-bacillus should be regarded as applying to those bacilli which, though resembling the diphtheria bacilli in many respects, yet differ constantly in others equally important. These bacilli are rather short, and more uniform in size and shape than the typical Loeffler bacillus. They stain throughout with the alkaline methylen-blue solution, and produce an alkali in their growth in bouillon. They are found in about one per cent. of healthy throats in New York City, and are never virulent.

9. One or more varieties of streptococci, and of other forms of cocci, exist in the great majority of the healthy throats of New York City.

10. The investigations of the Health Department have given striking evidence of the marked difference in mortality between true and pseudo-diphtheria, for while it was twenty-seven per cent. in diphtheria, it was under two per cent. in pseudo-diphtheria.

11. Diphtheria and pseudo-diphtheria are so similar in appearance, symptoms, and duration, that it is impossible to separate them except by bacteriological examination.

12. Persons who have suffered from diphtheria should be kept isolated until cultures prove that bacilli have disappeared from the throat.

13. In pharyngeal cases in which irrigation of the nostrils and throat with $\frac{1}{4000}$ bichloride of mercury solution has been practised every few hours, the bacilli have not returned in the throat for as long a time as when no antiseptic has been employed.

14. Inflammations of mucous membranes due to streptococci, either alone or associated with other cocci, are usually mild in character.

15. While the streptococci and, perhaps, other forms of cocci may be considered the primary etiological factor in pseudo-diphtheria, yet, in the majority of cases, at least, certain factors, such as exposure to cold or other deleterious influences, or the existence of certain infectious diseases, appear to be of great importance in determining the occurrence of this affection.

16. The slight mortality and the usual mildness of the cases of pseudo-diphtheria do not warrant us in enforcing isolation.

Rhythmical Traction of the Tongue in the Treatment of Asphyxia.—The *Therapeutic Gazette* for November, 1894, gives an editorial article upon this subject. Laborde claims that this method is the most powerful and simple of all means employed against death from respiratory failure. By traction upon the tongue the diaphragm is excited to its respiratory function, the sensory impulse is conveyed by the superior laryngeal, the terminal tracheal and bronchial expansion of the pneumogastric, the glosso-pharyngeal and lingual, and the motor respiratory nerves, especially the phrenic, respond to the reflex excitation.

Traction is performed fifteen times to a minute at about equal intervals, the tongue being pulled out sharply, so that its whole body, and not merely

the tip, is affected. Traction should be kept up at least thirty minutes. Mechanical artificial respiration should be applied at the same time, two assistants making pressure simultaneously, the first upon the sides of the chest and the second upon the epigastric region from below upward. This pressure is repeated fifteen times to the minute, and at the moment when traction upon the tongue is relaxed.

By order of the prefect of police, notices giving the method of Laborde have been printed and posted in the life-saving stations throughout Paris.

The first case in which rhythmical traction of the tongue was employed in Paris was by Mr. Lapicida (*La Tribune médicale*, July 5, 1894), chief of the corps of the life-saving station. A young woman, attempting suicide, jumped into the Seine, and remained submerged for five minutes. When rescued frictions were applied, but without success; but after rhythmical traction of the tongue for five minutes respiration was established.

An interesting case is related (*La Tribune médicale*, 1892, No. 46) of apparent death from violent shock by an electric current of a strength of more than two thousand volts. The hand of the patient was burned and his body was black. Rhythmical traction of the tongue was made for more than an hour, when natural respiration was re-established.

Cutaneous Hemorrhage Following the Use of Behring's Antitoxin. (*Berliner klinische Wochenschrift*, November 26, 1894.) By F. Mendel, M.D.

Two subcutaneous injections of ten cubic centimetres of horse's serum, each being equal to eight hundred antitoxin units, were given to a child four and a half years of age, sick with diphtheria. Eight days after the last injection and five days after the diphtheritic process in the throat and larynx appeared to have terminated, a hemorrhagic exanthema suddenly appeared, which was distributed over the entire body, but was most profuse on the side into which the injections had been made.

A hemorrhagic eruption in a non-septic case of diphtheria may be supposed to be due to the introduction of the foreign serum. From the researches of Landois we learn that there are destruction of blood-cells and a tendency to hemorrhage whenever heterogeneous serum is injected into an animal. Ponfick states that the introduction of one per cent. of the whole amount of blood is enough to cause such a condition. The patient in this instance received about one and three-fourths per cent. The writer attributes the late appearance of the exanthema to the gradual entrance of the serum into the circulation.

Should further observation prove that a tendency to hemorrhage is induced by the injection of serum, the substitution of some other fluid by which to introduce the antitoxin will become necessary.

The Methods and Value of Supervised Exercise in the Prophylaxis of Pulmonary Phthisis. (*New York Medical Journal*, October 20, 1894.) By Glentworth R. Butler, A.M., M.D., of Brooklyn.

As a certain vulnerability is antecedent to the development of pulmonary tuberculosis, measures directed towards the prevention or arrest of this disease must act, directly or indirectly, towards improving the resisting power of the tissues, an exception being made of those measures which tend to lessen the chances of infection. Aside, then, from quarantine and disinfection, the measures employed for the arrest of pulmonary tuberculosis are climate, abode, and out-door life; medication, general and local; personal hygiene and habits of life; exercise, general and special; rest and diet. These lines of treatment should be pursued side by side as far as is compatible with circumstances. Exercise is particularly valuable in the pretubercular status and in incipient tuberculosis. The benefits of general exercise are an increase in the bulk and strength of the muscles, stronger action of the heart, improved circulation, increase of respiratory action, better action of the skin, increased depurative functions, improved sleep, appetite, and digestion, and a decided bettering of the nervous system. The direct result of pulmonary gymnastics is to strengthen the muscles of expiration and inspiration, to increase the size of the thorax, to increase the ease and fulness of pulmonary circulation, and to promote the interchange of gases. The various modes of pulmonary gymnastics are singing, elocution lessons and practice; use of wind instruments; deep breathing, running, climbing, brisk walking, and sports which accelerate the breathing; use of compressed or rarefied air; military setting up drill, and supervised exercises. Supervised exercise should be under the care of a competent graduate of a school of physical training and supervised by the physician. The methods are insistence on hygienic dress, regular daily work, measurements and tracings of the thorax and use of the spirometer, ordering of a special set of exercises to fill certain indications. The indications are to correct deformities, depressions, and pathologic asymmetries of the chest; to increase chest expansion and vital capacity; and to secure deeper breathing. The movements may be active, passive, or duplicated. The aims of the movements are to elevate the shoulders, to draw back the scapulæ and clavicles, expanding the thorax, and to strengthen the muscles of forced and ordinary respiration. Excellent illustrations, showing the mode of performing the various exercises, accompany the article.

Results Obtained from a New Local Treatment of Pulmonary Tuberculosis. (*New York Medical Journal*, October 20, 1894.) By Carl Mund, M.D., of New York.

The author reports five cases of pulmonary tuberculosis, the diagnosis being confirmed in each case by finding the tubercle bacilli in the sputum, which were treated according to the method of Loebinger by insufflations of a powder containing insoluble calcium salts and ethereal oils, such as cinnamic acid. The patient is placed in such a position that the thorax is inclined towards the sound side, compressing the lumen of the bronchi on that side. The patient is then directed to take a deep, sipping inspiration,

and the tongue is drawn forward as in laryngoscopy. The powder is now blown into the lung of the patient, he lifting the arm and shoulder of the affected side at the same time that he breathes in, thus directing the current of air into the diseased lung. There was decided improvement in the physical signs and in the general condition in each case, the tubercle bacilli disappearing from the sputum entirely in four cases. The author claims that the powder reaches the seat of disease, and that it does not irritate the upper air-passages.

Two Cases of Actinomycosis of the Brain. (*Journal of Pathology and Bacteriology*, November, 1894.) By C. H. Martin, M.D., of Montreal.

This investigator reports from the laboratory of Professor Chiari two cases of metastatic abscess of the brain from primary actinomycosis of the lungs. Both cases were considered clinically to be of tuberculous origin. Martin calls attention to the fact that in the first of his cases both apices of the lungs were involved, and therefore Israel's great point in the differentiating of actinomycosis from tuberculosis—that the condition affects the base of the lungs—does not always hold good. In the first patient three abscesses the size of walnuts were found in the left occipital lobe. In the other case an abscess as large as a goose-egg, with numerous smaller seats of suppuration, was discovered in the upper third of the ascending frontal and parietal convolutions and the posterior third of the middle and superior frontal, together with a part of the corona radiata. Besides the cases described above, only four reports upon actinomycosis of the brain are found in the literature, one primary, one by continuity, and two by metastasis from the lungs.

Paralysis following Diphtheria of the Genitals Only. (*Lancet*, May 26, 1894.) By W. Gayton, M.D., of London.

An interesting account of this rare condition is given, which occurred in a girl four years of age. A vulvitis had existed for about two weeks. The genitals were swollen and covered with a diphtheritic exudation which had crept up the vaginal cavity as far as could be seen. An offensive vaginal discharge had caused excoriation of the skin of the groin, labia, and vulva. The urine had not been passed for two days, and when drawn contained albumin. The temperature was 96° F., the pulse feeble and slow. The throat was not sore at any time during the illness.

Applications of solutions of mercuric chloride and administration of iron and brandy resulted in the healing of the parts; the albumin persisted, however, and the temperature and pulse remained subnormal. In about a month strasbismus, palatal paralysis, and regurgitation of fluids through the nose, with an irritating, noiseless cough, took place, and a few days later visual accommodation was impaired. This was soon followed by great difficulty in swallowing, constant cough, headache, and rapid pulse, with increase of albumin in urine, and, although feeding by tube was resorted to,

the child died on the following day. Death was apparently due to the direct toxic action of the diphtheritic poison on the bulbar centres. The writer mentions the infrequence of diphtheria of the genitals, only six cases being found in a record of two thousand seven hundred and thirty-three patients.

Lennox Browne, in a letter to the editor (*Lancet*, June 9, 1894), refers to the case just cited, and recalls a similar case reported by Dr. Hall (*Lancet*, March 9, 1889) of a man, aged forty, who had diphtheritic membrane on an old eczematous patch near the anus, which was followed by typical paralysis of the fauces. A few weeks afterwards his daughter, aged nine years, had primary diphtheria of the vulva and vagina with perforation of the recto-vaginal septum, and also false membrane in the throat, which extended to the lungs, causing death.

Both writers report these cases as giving sufficient evidence to qualify the statement recently made that diphtheritic paralysis does not follow except when the fauces have been previously affected.

Sulpho-Carbolate of Sodium in Purpura Hæmorrhagica. (*Lancet*, June 2, 1894.)

Dr. Sansom reports a case occurring in a girl, aged twelve, where the extravasations occurred not only over the skin surface, but also upon the nasal, gastric, intestinal, vesical, and bronchial mucous membranes. He believes it to be due to influenza, and good results were obtained from the administration of sodium sulpho-carbolate in half-drachm doses every four hours.—*Universal Medical Journal*, July, 1894.

THERAPEUTICS.

IN CHARGE OF ALEXANDER D. BLACKADER, B.A., M.D.,
Professor of Therapeutics, McGill University, Montreal, Canada,
ASSISTED BY
D. J. EVANS, M.D

On the Use of Antipyrin in Large Doses. (*British Medical Journal*, December 1, 1894.) By T. McCall Anderson, M.D.

The writer advocates the use of very large doses of antipyrin in certain neurotic cases. He says that personally he has had hardly any experience of its deleterious effects—at least of a serious nature—when employed with due precautions. He details the case of a boy, aged nine years, who had suffered for the previous two and a half years from severe fits of a hystero-epileptic character, sometimes as many as thirty or forty attacks occurring in a day. The treatment consisted of rest in bed, regulation of the bowels, and the exhibition of antipyrin in gradually-increasing doses, commencing with five grains, thrice daily. In three weeks he was taking twenty-five grains three times a day, with complete cessation of the attacks.

The dose was then slightly lowered. The lad was dismissed from the hospital in two months as quite well, and it was reported later that there had been no recurrence of the attacks. In another case a lad of thirteen years, suffering from choreic movements of the right side, received under gradually-increasing doses as much as fifty grains thrice daily. He left the hospital in six weeks quite well. In another violent case improvement was very rapid under similar treatment. Dr. Anderson sums up his experience in the following aphorisms: 1. Antipyrin is not the dangerous drug that some observers have led us to suppose. 2. It may be given with safety in large doses, but the initial dose must be small, and it must be slowly and cautiously increased under careful supervision. 3. In large doses it often yields surprisingly good results, and in chorea it is the only medicine from which cures may confidently be expected.

On the Value of a Solution of Antipyrin as a Hæmostatic. (*Medical News*, December 15 and 22, 1894.) By Roswell Park, M.D., of Buffalo.

The writer says that during the winter of 1885 his attention was called to the efficiency of a solution of antipyrin as a hæmostatic. Carefully tested, he found that it also had distinct antiseptic properties, comparing favorably in this respect with most of the anilin derivatives in use. Experimenting with animals, he found that it could be used as an antiseptic styptic anywhere upon the bowel, the brain-surface, or elsewhere, causing no symptoms that made him regret its use. He now keeps always on hand a standard, sterilized, five-per-cent. solution, using it as a spray, a compress, or an injection. While it has not sufficient power to contract vessels that spurt, it almost instantly blanches and checks oozing from any surface from which blood is escaping just fast enough to be an annoyance. Moreover, it is practically unirritating. Park says that he has never known harm to occur from its entrance into any part of the body where it was not called for. He also recommends the use of the same solution in certain cases of inflammatory occlusion of the nose. To relieve the temporary smarting and irritation, a weak solution of cocaine may either be used a few minutes before the antipyrin, or the two may be combined. In certain acute catarrhal conditions of the upper air-passages and throat there is nothing which appears to him to give early relief more satisfactorily.

Chloralos in the Treatment of Night-Sweats.—In an editorial in the *New York Medical Journal*, December 8, 1894, the writer calls attention to an article by I. Sacaze (*Nouveau Montpellier médical*, October 6) claiming for chloralos distinct value in the treatment of the night-sweats, as well as in the sleeplessness, of chronic pulmonary disease. In a few cases improvement in this respect continued after a few doses only of the remedy had been taken, but, as a rule, on its disuse the night-sweats returned. In a few exceptional cases instead of inducing sleep it produced excitement and

disturbing dreams. In a number of cases of other chronic pulmonary diseases, accompanied by night perspirations, the remedy also proved effectual. The writer says that we do not yet know whether the drug acts by direct action on the sweat-glands or through the medium of the nervous centres. He suggests, however, the possibility that in pulmonary cases it may act by some modification of the phenomena of infection taking place within the lungs.

On the Diuretic Value of Calomel, and the Unusual Tolerance of it in a Case of Cardiac and Renal Disease. (*Medical News*, December 15, 1894.) By William Pepper, M.D.

In this paper the writer points out the value of the diuretic action of calomel under certain conditions of heart-failure. In a severe case, of which he details the particulars, with grave cardiac disease, embolism of kidneys and spleen, and a general septic condition, the temporary improvement effected by the use of calomel was at times simply marvellous. Under its influence there was invariably a great increase in the quantity of urine secreted, with relief of the dropsy and of the general symptoms. The effect was obtained only when the dose of calomel was a large one, and it never lasted more than a week or ten days. Small doses failed entirely; the greatest daily secretion of urine—one hundred and forty fluid ounces—occurred under the influence of three-grain doses administered every six hours. It was equally evident that the drug was most active when dropsy was marked, and when the bowels were kept in check. Owing partly to the quantity of morphine administered, the calomel did not appear to have any purgative tendency, but from the comparative ease with which the patient was purged with other remedies this explanation is not entirely sufficient. The rapid loss of the diuretic power after several days' action was well marked, and has been so frequently observed by others that it seems an established fact. After a few days' interval the calomel acts as effectively as before. The dose should be not less than one grain every three hours, and during its use the bowels should be controlled by opium, and the constant use of antiseptic mouth-washes should never be neglected.

On the Toxic Properties of Cocaine. (*Semaine médicale*, November 14, 1894.)—In a report recently presented to the Paris Academy of Medicine, by Maurel, of Toulouse, it is shown that under the influence of this alkaloid the leucocytes undergo changes: they become spherical and rigid, increase in size, and no longer adhere to the vessel walls. On the other hand, the capillaries contract, and thrombosis and embolisms, particularly pulmonary embolisms, may be produced. These changes may be seen after even small doses of concentrated solutions. His experiments show that intra-arterial injections, made in the direction of an unimportant viscus, are much less dangerous than intravenous injections.

General Peritonitis under Medical Treatment. (*Revue méd. de la Suisse Romande,* October 20, 1894 ; *British Med. Journ.*, December 8, 1894.) By L. Revilliod, M.D.

The writer, while not denying that surgery has its applications in this disease, insists strongly that there is a danger of underrating purely medical treatment. He gives details of six cases,—four of intestinal origin, one tuberculous, and one following scarlet fever. All were severe cases. The therapeutic measures adopted were as follows: Total abstention from all alimentation by the mouth, or water given by spoonfuls when tolerated. This could be continued several days. A few leeches, applied at the onset to the most sensitive parts of the abdomen, and sustained in their action by thin poultices or soothing applications, the warmth of which favors the action of the phagocytes, and calomel given in small doses. To relieve the distress, a few drops of laudanum in iced water were given occasionally by the mouth, or, if this were rejected, an enema of tepid water and laudanum was substituted. The writer thinks no case so severe as to be despaired of. He desires to note the diagnostic and prognostic value of the quantity of urea eliminated, a quantity which reaches its highest figures when the disease is at its most acute stage.

Diabetes Treated with Extract and by Grafts of Sheep's Pancreas. (*British Medical Journal,* December 8, 1894.) By P. Watson Williams, M.D.

While the question of the treatment of pancreatic diabetes by means of the pancreas or extracts is a matter of special interest, and more particularly while the possibility of treating pancreatic diabetes by means of grafts of pancreas is likely to receive some attention in the future, the writer desires to place on record the results obtained by him in the Bristol Royal Infirmary. His first case, a boy of fifteen years, was in good health up to three weeks before admission. At that time he was weak, rapidly wasting, passing an average daily amount of urine amounting to seventy-seven ounces, containing three thousand grains of sugar and two and a half per cent. urea. After altering his diet he was given, first, freshly-minced pancreas for some days, afterwards a freshly-prepared extract of pancreas, and afterwards an extract hypodermically, with practically no alteration in the symptoms. Codeine and morphine were also given, but soon lost their slight control on the amount of sugar excreted. After about five months of such treatment, portions of a pancreas taken from a freshly-slaughtered sheep under strictly aseptic precautions were grafted into the subcutaneous tissue of the breast and the abdomen, the whole operation being completed within twenty minutes of the death of the sheep. Although the incisions appeared to remain quite healthy, coma set in, notwithstanding the free use of alkalies, and the lad died on the third day after the operation. At the necropsy the patient's pancreas was found small, shrivelled, and appeared to be little more than fibrous tissue. In a second case, which appears to have

been of a comparatively mild type, fresh pancreatic extract, both hypodermically and by the mouth, produced no amelioration whatever.

SURGERY.

IN CHARGE OF HENRY R. WHARTON, M.D.,

Demonstrator of Surgery and Lecturer on Surgical Diseases of Children in the University of Pennsylvania; Surgeon to the Presbyterian Hospital, the Methodist Episcopal Hospital, and the Children's Hospital; Consulting Surgeon to the Presbyterian Orphanage,

AND

JOSEPH P. TUNIS, A.B., M.D.,

Assistant Demonstrator of Surgery in the University of Pennsylvania; Surgeon to the Dispensaries of the Presbyterian, Methodist Episcopal, and Children's Hospitals.

A New Method for Sterilizing Ligatures. (*Semaine médicale*, June 6, 1894.)

Mr. Répin, after numerous experiments on the sterilization and preservation of ligatures, finds that the vapor of alcohol exercises a bactericidal action which is capable of destroying all species of micro-organisms. Spores of the greatest resistance, like those of the bacillus subtilis, anthrax, tetanus, etc., are killed by remaining from thirty-five to forty-five minutes in the vapor of absolute alcohol raised to 120° C. Catgut is sterilized by this process without losing any of its properties. Its sterility is then tested by placing it in a tube of bouillon which is incubated for several days. If sterilization is not complete the bouillon becomes cloudy, but if the bouillon remains clear the catgut is rigorously aseptic.

Technique of Major Amputations. (*Deutsche med. Zeitung*, May 21, 1894.)

Crédé, of Dresden, thinks that the methods employed for the healing of amputation wounds are far from satisfactory; that union by first intention is not always the rule; that the best estimate of the comparative value of the various methods is furnished by the time required for complete cicatrization. He attaches little importance to the Esmarch bandage, and considers the form of the flap a secondary matter. The important point is to cut a flap lined with a thick muscular layer, as the muscles have a tendency to undergo ultimate retraction. After the catgut ligatures are secured, he approximates the edges of the flap with a gauze bandage applied directly upon the stump in such a way as to make slight compression before the dressing is applied.—*Universal Medical Journal*, July, 1894.

Extirpation of Diverticula of the Œsophagus. (*Berliner klinische Wochenschrift*, 1894. By Professor König.)

Two instances of this rare condition are reported in which operations were performed for removal of the sac. One occurred in a man fifty years

of age, and the other in a woman of sixty-two years. No satisfactory etiological factors were noted: one began without known cause, and the other was preceded by a persistent cough which followed an attack of influenza. The sac in each case began at the lower border of the pharynx; but while in the man it was situated on the right side of the œsophagus and trachea, in the woman it lay on the left side of the vertebral column, then crossed over that column behind the œsophagus and trachea to the right side. The condition which caused the crossing of the sac from left to right was not revealed during the operation; but the author suggests that it may have been due to the position of the mouth of the sac, which was on the posterior surface of the œsophagus, or to its having been bound down by the fascia of the pharynx. The external appearance of these sacs when filled with food gave in the man a tumor of about the size of a man's fist, which pressed against the right sterno-cleido-mastoid, and in the woman a tumor which pressed the neck and trachea forward. Both tumors were covered by goitres.

The contents of the sac could be expelled by pressure, expulsion being accompanied by a peculiar sound. Very little food entered the stomach, and both patients were quite emaciated. A sound could not be passed to the stomach in either case. Dysphagia was present in both cases. The incision for the operation extended from the thyroid cartilage to the sterno-clavicular articulation, being on the right in one case and on the left in the other. The underlying tissues were then divided and the sac enucleated with the fingers. It was then incised, and the wound in the œsophagus closed by two sets of sutures. For four days after the operation the patients were nourished by enemata, and then began taking fluids by mouth.

The Pathology of Enlargement of the Prostate. (*Lancet*, October 20, 1894.) By C. Mansell Moullin, M.D., of London.

The theories current at present regarding this condition are: 1. That based upon the analogy between it and fibroid disease of the uterus. 2. That it is merely an occurrence in a constitutional disorder which begins as an arterio-sclerosis and ends in fibroid degeneration, affecting the genito-urinary organs in a special manner. 3. That it is secondary to and developed as a compensatory measure to primary changes in the bladder.

These three theories are disproved by the following facts: 1. The prostate is not the homologue of the uterus. 2. Uterine growths originate as fibromyomata and have little or nothing to do with the mucous membrane; neither does the enlargement begin as a fibroid degeneration, but as a glandular overgrowth. 3. The prostate is of sexual origin and has to deal only with sexual function. It has nothing to do with micturition, which, if the prostate remains undeveloped or undergoes atrophy, takes place just as if the prostate were normal. There are, however, certain facts which we know that suggest the real cause. The enlargement is dependent in some way upon the testes. The evidence in favor of this is in brief as

follows: 1. The normal development of the prostate is undoubtedly controlled by that of the testes. Up to puberty there is no prostate worth mentioning. 2. If castration is performed before puberty the prostate never grows; if after puberty, it wastes and disappears, and the same has now been shown to be true of the abnormal development known as enlargement. This rarely begins after an age at which it may be presumed that the testes are no longer functional, and it disappears if they are removed. There are now nine cases on record in which castration has been followed by a complete disappearance of the enlargement within a few weeks. How the testes act is questionable. The mere induction of sterility (such as by section of the vas deferens), although it may cause atrophy of the testes, does not appear to be sufficient. The influence, whatever it is, comes from the testes themselves and exists so long as they are present. It may be exerted through the nervous system or through the circulation. Three cases have lately been reported of unilateral atrophy after removal of one testicle. If post-mortem examination of these cases should show this to be true, it is probable that the influence is exerted through the nervous system.

If this suggestion, that enlargement of the prostate is dependent upon some change which takes place in the testes during the latter part of their active life, should be accepted, it will be a curious instance of the way in which modern views are sometimes foreshadowed by the speculative theories of a long past date.

Removal of the Gasserian Ganglion for Facial Neuralgia; Successful Case. (*Boston Medical and Surgical Journal*, November 1, 1894.) By Maurice H. Richardson, M.D., and George L. Walton, M.D., of Boston.

The Gasserian ganglion was removed from a female patient, age sixty-three, for severe facial neuralgia of about fifteen years' duration. The second and third divisions of the fifth nerve had been operated upon by avulsion, extracranially, with relief of pain for a year and a half. At the end of this time the pain returned more severe than ever before. The operation for removing the Gasserian ganglion was done by removing a trephine button from the squamous portion of the temporal bone, just posterior to the temporo-sphenoidal suture. The operation was undertaken in the subarachnoid space on account of the extremely thin dura in this situation. The temporal lobe was lifted without difficulty. After the ganglion had been located the dura was incised and lifted away from the petrous portion of the temporal bone, thus isolating the ganglion. The portion between the pons and the ganglion was cut with a blunt-pointed scissors, and the ganglion was seized with strong forceps and avulsed. The operation was prolonged by severe hemorrhage. The temporal lobe was severely lacerated superficially and numerous points of hemorrhage were noticed on it. In the opinion of the authors the motor root of the fifth nerve must always be destroyed. There is danger of wounding the adjacent sinuses. Two weeks after the operation the wound was perfectly healed,

speech practically perfect, some slight impairment of memory, some slight numbness in the distribution of the fifth nerve, pupils alike, jaw opens fairly well, forehead is smooth on the left, and left eyelid droops, the mouth is somewhat asymmetrical; but the movements of the lips are perfect. The advantages of this operation are that the mobility of the jaws is retained, the zygoma need not be removed, the ganglion can be exposed and removed, including its root on emerging from the pons, the danger of wounding important structures is minimized, and danger of sepsis from the pharynx is avoided. The mortality should not exceed ten per cent.

Antiseptic Action of Iodoform. (*Archives de Médecine expérimentale et d'Anatomie pathologique*, 1894, vol. vi., No. 6.) By N. Stchégoleff, of St. Petersburg.

Iodoform is a true antiseptic, exercising *in vitro* a direct antisepsis upon the cultures of the tubercle bacilli, whether they be human or avian. Contact of forty-eight hours was found to be sufficient to cause the death of a culture of human tubercle bacilli.

Iodoform introduced into the body, along with living and virulent tubercle bacilli, diminishes the virulence without hindering the development of the bacilli. With ordinary pyogenic micro-organisms, iodoform is not an antiseptic in the true meaning of the word,—that is, it is not capable of killing the pyogenic micrococci; it exercises, however, an indirect antiseptic action upon suppuration, by either destroying or forming new chemical combinations with the toxins. By this means the toxins lose their pyogenic character, and become inoffensive to the organism.

Removal of Stone in the Bladder. (*Medical News*, June 23, 1894.) By William S. Forbes, M.D., of Philadelphia.

The author exhibited a lithotrite before the American Surgical Association designed on the following lines: 1. To meet the anatomical conditions, and to conform, at the same time, to the laws of mechanics; special attention being paid to the economical disposal of material. 2. With all exposed edges gently rounded to prevent injury to the bladder. 3. With a male blade, triangular in shape, so as easily to penetrate a calculus, and to keep the fragments from flying. 4. With a "slow thread" to reduce strain on the instrument and on work done by the operator. 5. With a power-recording mechanism in the handle to measure strain upon the instrument and the crushing resistance of the calculus. 6. Size about the same and weight just the same as those of the Bigelow and Thompson instruments.

These instruments, which bear the name of "Forbes," are to be tested by the manufacturer, and the number of pounds to which they have been subjected with safety is to be recorded on the handle, so that the operator may know when he is beyond the line of safety. The highest pressure to which a "Forbes" lithotrite, No. 33, has been subjected without loss of

shape or strength is six hundred pounds. The ultimate pressure required to render the instrument inoperative was six hundred and fifty pounds. Though rendered inoperative, it could be closed and withdrawn from the bladder. A comparative table of the resistance of one hundred and eighty-four calculi is appended to the paper, in which it is shown that the greatest resistance offered by any calculus so far tested is four hundred and six pounds. This shows that in the "Forbes" lithotrite No. 33 there is one hundred and ninety-four pounds more strength than is required to crush the toughest calculus yet tested. The instrument and the testing apparatus were devised by Mr. John S. Forbes, mechanical engineer.

Stricture of the Rectum following a Whitehead Operation for Hemorrhoids. (*Medical News*, March 31, 1894.) By Barton Cooke Hirst, M.D.

The patient, a woman, had been operated on eight weeks before the writer saw her, but for what, she could not tell. Since that time she had had constant pain in the back, difficulty in defecation, and excruciating agony when the bowels moved. Examination revealed a broad annular stricture of the rectum, just within the anus, which barely admitted the tip of the little finger. Two angry fissures were found *in ano*, and the whole circumference of the stricture was badly ulcerated. The recto-vaginal septum was cut, the stricture exposed, and then excised. The end of the rectum was then brought down and stitched to the anus, and the wound closed by rectal and perineal stitches, as in complete tear of the perineum after labor. A complete cure was effected, there being entire control of the sphincter, and no difficulty in defecation. The writer learned later that a Whitehead operation for hemorrhoids had been performed while the patient was suffering from acute gonorrhœa, the area had become infected, and a virulent rectal gonorrhœa had resulted in stricture.

ORTHOPÆDICS.

IN CHARGE OF REGINALD H. SAYRE, M.D.,

Assistant to the Chair of Orthopædic Surgery, Bellevue Hospital Medical College, New York.

Extension Apparatus for the Application of Plaster-of-Paris Bandages to the Lower Extremities and to the Pelvis. (*Beiträge zur klinische Chirurgie*, 1894, vol. xii., No. 1.) By P. Bruns, M.D., of Tübingen.

The author has modified the apparatus formerly used at the Tübingen Clinic by v. Bruns. It consists of an iron plate elevated above the table by a leg which is screwed to the table by a clamp. Attached to the plate are bars for counter-extension against the perineum. An upright supports a cross-bar which holds straps fastened to the ankles, and is prevented

from coming nearer the pelvis than desired by means of an extension rod which runs from it to the upright leg of the sacral support.

In applying plaster-of-Paris dressings for fractured thighs, or after osteotomies, or the reduction of deformities following hip-joint disease, the patient is placed with his sacrum resting on the sacral plate, while the shoulders are supported by a block or pillow. The upright is fastened to the ankle-straps, and traction is made on the legs to any desired extent, the extension rod which connects the two uprights serving to keep them apart. This apparatus is most useful, and an improvement on that used so many years in Bellevue Hospital, New York, in the addition of the mechanical device to make traction on the legs.

The Remote Results of Tubercular Coxitis.—Dr. H. P. De Forest has a *résumé* in the November number of the *Annals of Surgery* of an article on this subject by Bruns, M. D. (*Beiträge zur klinische Chirurgie*, 1894, vol. xxii., No. 1), who has tried to collect statistics of the cases of tubercular hip occurring at the Tübingen Clinic for the last forty years. Doubtful cases were left out, also all that recovered with perfect function of the joint,—cases supposed to be rheumatic, or due to bending of the neck of the femur, all cases less than three years under observation, and all where the disease lasted less than one year and a half. These omissions reduced the number of cases noted from six hundred to three hundred and ninety. Of these, three hundred and twenty-nine were treated conservatively and sixty-nine had resection performed.

Bruns concludes: 1. Tubercular coxitis occurs almost exclusively during the first two decades of life,—forty-eight per cent. in the first, thirty-seven in the second, and only six in the third decade. 2. One-third of all cases manifest no formation of pus; two-thirds develop abscess with rupture and formation of fistula. 3. Fifty-five per cent. of cases treated conservatively are cured, the time averaging four years. 4. Death resulted in forty per cent. of all cases, after the disease had been in existence three years on the average, and was caused usually by tuberculosis of other organs. 5. Of non-purulent cases, seventy-seven per cent. were cured; of the fungo-purulent, forty-two per cent. Suppuration in the joint doubled the mortality. 6. Prognosis grows worse in proportion to the age at which disease begins. 7. Of those who were really cured of the tubercular coxitis many subsequently had tuberculosis of other organs.

Of the cured cases the majority were robust, walked fairly well, and could go quite long distances. The limping was mediumly well marked, the joint being for the most part ankylosed, and the limb atrophied and shortened. Taking the actual and the practical shortening together, the average was seven centimetres, while some cases showed as much as twelve.

When shortening was due to slipping of the head of the femur on the ilium, a ridge of bone could usually be felt above it, showing that the acetabulum had changed its place.

During the forty years the method of treatment underwent changes. At first blisters, moxæ, blood-letting, and hot irons; then a period of mechanical treatment,—first, with extension apparatus, then by the use of hardened bandages, finally, in recent years, by iodoform injections. These cases are too recent to be compared with the others.

Owing to negligence of the patients many of the ambulatory cases had practically no treatment. Those who had to stay in bed had regular treatment only so long as they remained in the hospital.

Resection did not seem to diminish the risk of general infection.

Treatment of Congenital Dislocation of the Hip. (*Annals of Surgery*, August, 1894.) By E. H. Bradford, M.D., of Boston.

The methods of treating congenital dislocation of the hip are: first, by apparatus; second, by forcible reduction without traction; third, by operative reduction. The clinical experience of the author embraces ten cases: four treated by apparatus of some form, and in three combined with rest in bed; one treated by an attempt at forcible reduction under ether, without success; and five operated on according to Hoffa's method. Three of the latter five cases presented double deformity, and of these two had two operations performed, making seven operations. Three of the operative cases died, but from causes not connected with the operation. The obstacles met with in Hoffa's operation are: first, the difficulty of determining the location of the true acetabulum; second, the difficulty of complete reduction; third, the difficulty of retaining the head in the acetabulum when thoroughly reduced. From dissections of the hip-joint and operations upon the cadaver, the author recommends an incision slightly in front of the external border of the great trochanter, freeing the great trochanter from its muscular attachments, and making an incision in the capsular ligament at right angles to the skin incision; then freeing the capsule from the neck of the bone. This latter incision divides the attachments of the "Y" ligament of Bigelow, the remaining fibres of the capsular ligament are then more easily separated, and the difficulty attending complete reduction is overcome. The thorough freeing of the attachments of the capsular ligament does away with the difficulty of retention of the head. Treatment by apparatus does not effect a cure, correction by forcible reduction is not reliable, while operative interference presents the best prospect of permanent relief.

OPHTHALMOLOGY.

IN CHARGE OF CHARLES A. OLIVER, A.M., M.D.,
Philadelphia, Pennsylvania,
AND
EDMUND LANDOLT, M.D.,
Paris, France.

Uratic Conjunctivitis. (De la Conjonctivité uratique. *La Médecine moderne*, May 19, 1894.)

Kuhn, of Paris, has had frequent opportunity for many years past to observe a variety of conjunctival inflammation to which Dehenne has given the name of *Conjonctivité uratique*. The principal symptoms result from the presence of crystals of uric acid in the palpebral conjunctiva. The patients complain of pricking feelings in the eyes, with the sensation of foreign bodies under the lids. Examination shows congestion and inflammation of both the ocular and palpebral conjunctivæ, with engorgement of the anterior scleral vessels. Treatment consists in removing the crystallized masses. This is to be followed by soothing and astringent washes, with the internal administration of some of the salts of lithia. Regimen as to diet, exercise, etc., is also necessary. The author states that this variety of conjunctival disease is extremely prone to recur.

Pseudo-Membranous Conjunctivitis, Not Diphtheritic; Cure in Four Days. (Conjonctivité pseudo-membraneuse non-diphthéritique; Guérison en quatre jours. *Gazette hebdomadaire des Sciences médicales*, July 29, 1894.)

This case, seen by Albert, occurred in a three-months-old infant, and was recognized two days after the disease had appeared. The false membrane which covered the entire mucous areas of both upper lids was carefully stripped off without the loss of a drop of blood. The underlying tissue with the rest of the conjunctival sac, which was apparently healthy, was frequently washed with weak solutions of lemon juice and bichloride of mercury. In several days all vestiges of the disease had disappeared. Microscopic examination of the membranes, which had been immediately placed in alcohol after removal, failed to exhibit any evidences of microbic infection.

Effects of Exposure upon the Functions of Sight. (*New York Medical Times*, July, 1894.) By Elmer Gates, of Washington, D. C.

Professor Gates has made a most important series of investigations upon this subject. Of three puppies from the same litter, the first failed to receive any special attention, the second had its eyes carefully excluded from light from the moment of its birth, whilst the third was subjected to so

thorough a training with colors that it was able to discriminate fifteen different tints.

Careful microscopic examination of the region of the visual cortex in the first animal showed an utter want of development. The same region in the trained animal exhibited an increase in density of structure, betterment of cell elements, and greater vascularity than was evidenced in the corresponding structure in the untrained dog; in fact, it closely simulated the cortex of the human brain in the same region.

On the Absorption of Virus by the Normal Conjunctiva. (*Le Bulletin Médical*, November 1, 1893.)—Comte, of Toulouse, has made some interesting investigations upon the rapidity of absorption of virus from hydrophobia, chicken cholera, and glanders upon the normal conjunctiva of rabbits. With different amounts of virus and varying periods of time, he, as a rule, has found that the degree of certainty of absorption is in direct ratio with the duration of contact.

OTOLOGY.

Can Important Topographical Relations of the Temporal Bone be determined from the Form of the Skull? (*Archives of Otology*, 1894, vol. xxiii., No. 3.) By B. Alexander Randall, M.D.

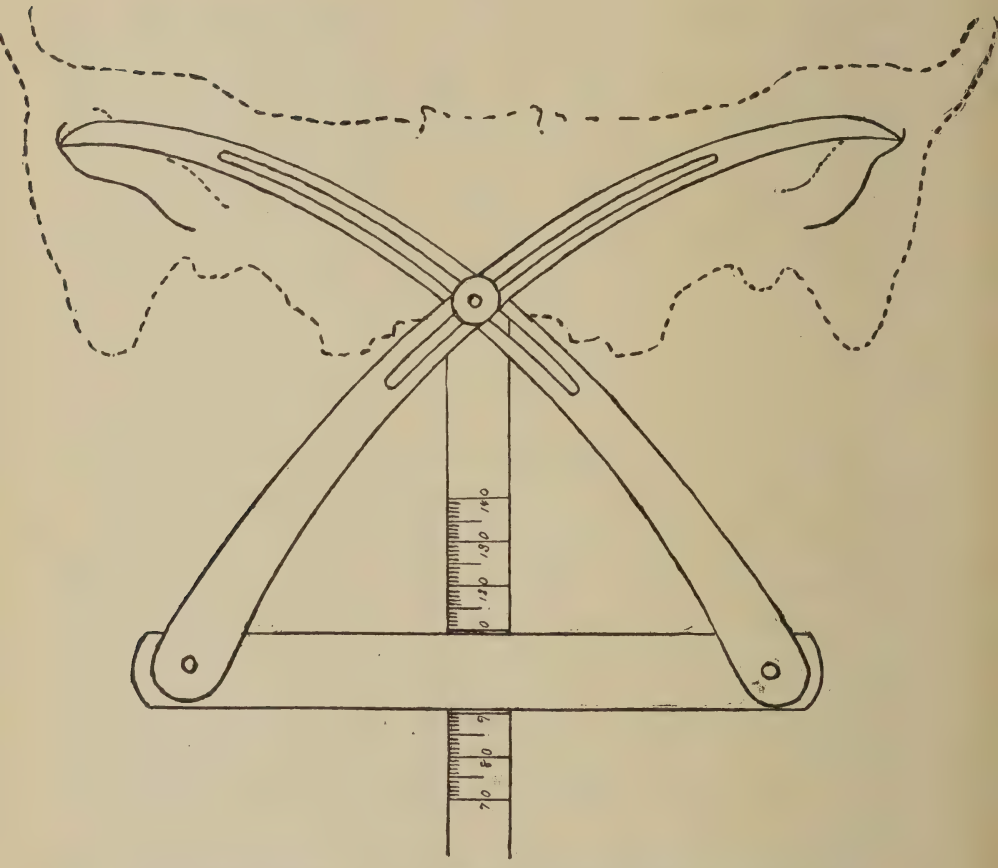
The writer has been led to the study of this subject by the desire to test the measurements of Kœrner and Schueltzke, who differ widely in opinion. Kœrner's method of orthographic projection necessitates division of the skull. Schueltzke and the writer measure by calipers, which method the latter considers sufficiently accurate to meet the requirements of the surgeon. The figures are not more than one millimetre astray in the larger dimensions, except that from sulcus to sulcus, which, at times, was two millimetres in error; and in the small dimensions the data are accurate to a small fraction of a millimetre.

He ascertained that the middle cerebral fossa may be found at any height up to fifteen millimetres above the spina on either side and in any type of skull. The thin point where the lateral sinus most nearly approaches the surface was found in the five hundred skulls to average in thickness six and one-tenth millimetres on the right and six and six-tenths millimetres on the left side. The distance between the sulcus and the posterior wall of the canal is an important dimension which defines the posterior limit of the field of operation, and averaged twelve and one-tenth millimetres on the right and twelve and five-tenth millimetres on the left, here also showing less room on the right side. The distance of the point of entry from the lateral sinus, taken five millimetres back of the spina,

gave an average of eleven and three-tenths millimetres on the right and eleven and eight-tenths on the left, with minima less than one millimetre.

The author concludes, from the results obtained, that safe or dangerous relations, with maximum or minimum dimensions of the intervening structures, may be found on either side and in any type of skull. The surgeon must proceed in operation as if he were sure that the lateral sinus or the middle cerebral fossa lay directly in his track. The drill and trephine are

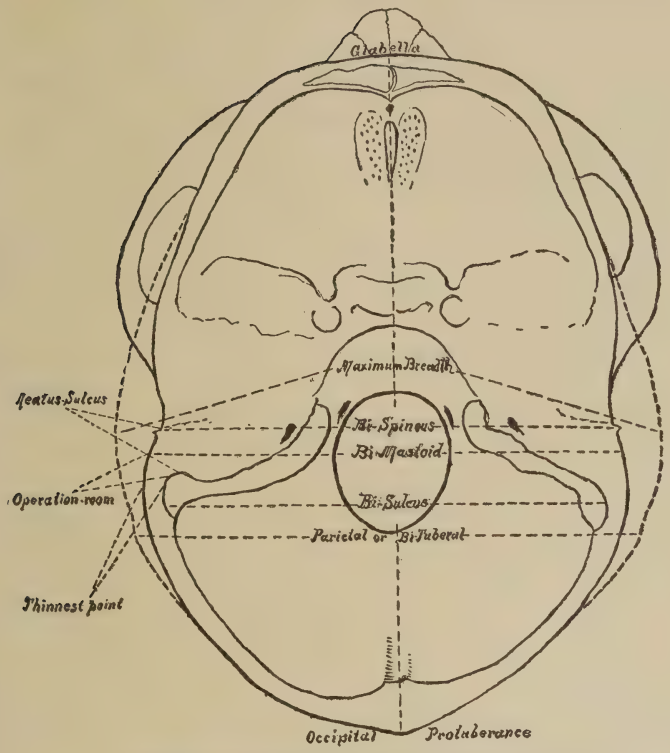
Fig. 1.



Inside calipers employed to measure the maximum distance between the sigmoid sulci.

rightly considered less safe than the chisel. The lateral sinus may be so superficial that it is discerned through the thin bony covering. The most reliable guide to the point of entry is the upper posterior margin of the auditory meatus, since in eleven hundred temporals the author has never found the middle cerebral fossa to extend lower than this. The chiselling should begin as close as possible behind the spina and be carried inward, forward, and slightly upward, if the intention is to open the antrum : deeper penetration than twenty millimetres is rarely safe.

FIG. 2.



Scheme showing the most important dimensions of a skull.

DERMATOLOGY.

IN CHARGE OF W. A. HARDAWAY, A.M., M.D.,
Professor of Skin-Diseases in the Missouri Medical College, St. Louis.

ASSISTED BY

C. F. HERSMAN, A.M., M.D.,
St. Louis.

On Variola, Vaccinia, and the Nature of Vaccine Lymph.—At the sixty-second annual meeting of the British Medical Association there occurred a very interesting discussion as to the true nature of vaccinia. Dr. Copeman referred to the long dispute which has existed as to whether vaccinia is in reality one with small-pox, or whether it is to be regarded as a distinct disease. The author thinks the fact of vaccination protecting against variola is strong presumptive evidence in favor of the unity of the diseases. With the exception of Chaveau and his companions of the Lyons commission, all experimenters have produced typical vaccinia by inoculation of cows with variolous virus. At times the first inoculation has

at once proved successful, but more often it is only at a second or third remove inoculation that a typical result has been obtained. The author then relates a successful experiment made by himself, in which every precaution was taken to prevent the inoculation into the calf of vaccinia along with the small-pox virus. He then refers to the fact that though many thousands of children have been vaccinated with lymph procured by inoculating calves with human variola, not one case of true small-pox has been seen to follow such vaccination. Dr. Copeman thus sums up his conclusions: "If, then, it can be conclusively proved that small-pox lymph, by residence in the tissues of the calf, may be so attenuated and altered in character as to become deprived of its power of causing a generalized eruption, and, more important still, that by such treatment it loses its contagious nature, while causing at the site of inoculation what is indistinguishable from a typical vaccine vesicle, one is irresistibly drawn to the conclusion that vaccinia is a modification of, if not identical with, variola, especially as these two diseases exert a mutually protective action against one another."

Dr. Copeman also stated that he had found in vaccine lymph a small bacillus, which in the earlier stages of the vesicle is often very abundant, but at a later period disappears to a large extent. He thinks that the organism described by Klein is the same which he has found. Similar bacilli are present in variolous lymph of the fifth day of the eruption. It has not yet been possible to obtain this bacillus in pure culture. When ordinary vaccine lymph is inoculated into culture-media, growths of various saprophytic organisms spring up. Dr. Copeman has found that if the lymph is mixed with glycerin or anhydrous lanolin and then kept protected from the air for a period of several weeks, all extraneous germs disappear, while the infective power of the vaccine virus seems to be increased. This is certainly a point of great practical importance, and it will no doubt be possible by using glycerin lymph to prevent the appearance, after vaccination, of those distressingly sore arms which, while they provide no protection against small-pox, often put the patient in jeopardy from septicæmia.

Lichen Infantile.—Escherich (*The Medical Week*, September 7, 1894) describes an eruption which attacks anæmic children of from one to two years old. At first sight it presents a resemblance to prurigo, but, unlike the latter disease, it is curable. The eruption consists of small yellow or brownish nodules situated upon both aspects of the extremities, and sometimes invading the trunk and face. There is intolerable itching. For the cure of the malady the following is to be rubbed on the affected parts each evening:

℞ Green soap,
Olive oil, āā ℥i.—M.

This is allowed to remain on all night, and the next morning a warm bran-bath is given. During the day the parts are dusted with starch to allay itching. Internally, cod-liver oil is to be administered.

CLIMATOLOGY.

IN CHARGE OF GUY HINSDALE, M.D.,
Lecturer on Climatology in the University of Pennsylvania, Philadelphia.

Normal Temperature of Europeans and Negroes in Africa. (*Edinburgh Hospital Reports*, vol. ii., 1894.) By R. W. Felkin, M.D.

From personal observations extending over two years in Central Africa the author found the normal temperature of Europeans (British and German) living between Khartoum and the equator for over four years to be 99.1° F. This is the mean of more than eight hundred observations made upon thirty-seven individuals. The normal temperature of Europeans living in the same locality less than two years was 99.3°. This result was obtained from five hundred observations on seven individuals. The normal temperature of Soudanese (Arabs) living between Suakin and Khartoum and in Kordofan and Darfour was 99° F. One hundred individuals were examined and upward of eight hundred observations made. The normal temperature of negroes living between the equator and 10° N. was 97.8° F. Six hundred observations were made on this point. All the observations were taken two hours after food, while at rest in the shade, and the thermometer was invariably placed in the axilla.

The Influence of the Climate of Egypt upon Disease. (*Lancet*, October 27, 1894.) By Leigh Cauney, M.D.

The author wisely says that the prescription "Egypt" can hardly be considered sufficient in a country a thousand miles long, presenting such different conditions as are to be found in a life in Cairo, at the pyramids, or Helouan, at Luxor or Assouan (both several hundreds of miles south of Cairo), in a dahabeah or steamer on the Nile, or in a tent in the desert, etc. Physicians, however, at the places mentioned, including the author, who is physician to the Luxor Hospital, agree in their experience, as appears in Dr. Cauney's tables.

Affections benefited.—Phthisis, (1) non-erethic cases; (2) hemorrhagic cases; (3) non-acute cases of the first and second stages, especially where there is commencing deposit without very acute symptoms; (4) chronic quiescent phthisis, with or without cavities; (5) cases associated with bronchitis. Asthma, idiopathic or symptomatic. Chronic bronchitis and emphysema. Cases convalescent from pneumonia, pleurisy, especially cases following influenza where the structures have not returned to their normal state. Chronic nasal and pharyngeal catarrh and Eustachian deafness. Cases of mental strain, breakdown and irritability from overwork. Bright's disease in all forms except acute.

The unsuitable cases are: phthisis with very acute symptoms or tendency to diarrhœa or repeated pleurisy, or involved larynx or active disease of both legs. Advanced emphysema with weak, dilated right side of the

heart; fatty heart, angina pectoris, hypertrophy and dilatation of the left side of the heart; aortic regurgitation. Dysentery or after dysentery; chronic diarrhœa, diabetes; the scleroses and general paralysis of the insane.

The editor would add, however, that methods of travel—*e.g.*, the voyage to Egypt, the common and almost inevitable practice of riding donkeys, making expeditions to the pyramids and ruined temples, not to speak of methods of cooking and the injudicious use of beverages—have an important practical bearing in making up the result in any given case.

The Influence of Meteorological Conditions on the Progress of Mental Affection. (*Cinquième Congrès des Médecins russes*, December 31, 1893.) By Nijegorodjeff.

It is chiefly the change of meteorologic equilibrium which influences mental activity. In the majority of cases the maximum effect on mental patients is produced by the approach of a cyclone, especially when accompanied by an increase of temperature, with rain, winds, and gales. The anticyclone exerts, in general, a favorable tonic influence on asthenic and weakened patients. Moderate changes of temperature and barometric pressure are favorable.

The influence of meteorologic states is especially manifest in cases of organic disease of the brain. Women are more susceptible than men. The most important element in its influence on the progress of psychoses is the atmospheric pressure, next the temperature and humidity, winds, etc. A very great sensitiveness to atmospheric variations is considered by the author to be a sign of hereditary or acquired "dégénérescence."

Consumption: Roughing it vs. the Coddling Treatment. (*New York Medical Record*, October 20, 1894.) By Charles E. Page, M.D., of Boston.

Consumptives die from fatty degeneration of the lungs due to want of proper exercise of these organs, as well as from fatty degeneration of the entire body from want of proper muscular exercise. To avoid this fatty degeneration the author advises his consumptive patients to undergo a radical change in their manner of living, adopting an almost entirely outdoor life. The instructions include leaving off the customary winter flannels, using sufficient outside clothing when out in the winter air, a daily dash of cold water in the morning followed by a brisk rubbing of the skin with a coarse towel, an air-bath in the sleeping room with brisk arm and chest exercise, sleeping in a room in which there is a free play of air both winter and summer, and the adoption of a nutritious, plain, easily digestible diet. This treatment is not applicable in patients advanced with the disease. The author cites several cases of incipient phthisis, in patients as well as in relatives and friends, cured by this plan of treatment.

PATHOLOGY.

IN CHARGE OF ALLEN J. SMITH, A.M., M.D.,
Professor of Pathology in the Medical Department of the University of Texas, Galveston, Texas,
AND
HENRY W. CATTELL, A.M., M.D.,
Demonstrator of Morbid Anatomy in the University of Pennsylvania; Prosector to the American Anthropometric Society; and Pathologist to the Presbyterian Hospital, the Institution for Feeble-Minded Children at Elwyn, etc.

Antidiphtheritic Serum, with General Remarks on Artificial Immunity. (*Medical Chronicle*, October, 1894.) By Sheridan Delépine.

The following excellent *résumé* of this subject by Delépine is given at length, though a number of the facts stated have already been published in this magazine.

In 1889, Roux, speaking in London on behalf of Pasteur,[1] said, "The immunity which we could only give by the introduction of a living virus into the body we can now effect by the introduction of a chemical substance into the tissues; and these vaccine substances are exactly those which we have observed in infectious diseases as being the cause of death. In large quantities they kill, in small they confer immunity." Roux was well qualified to speak on this subject, for the observations which he published in 1888, jointly with Yersin,[2] on the diphtheritic poison have remained among the most important. Only one year after the words quoted above had been spoken, Behring and Kitasato[3] announced that the blood of animals which had been rendered refractory to tetanus acquired the property of destroying the toxins of tetanus both *in vitro* and after injection into the body of other animals. As the blood of non-vaccinated animals did not destroy the toxin of tetanus, these authors concluded that the immunity of rabbits and mice which had been rendered refractory by the injection of blood of vaccinated animals depended on the destruction of the toxin of tetanus by a substance contained in the blood. This property of the blood was not impaired by the removal of blood-corpuscles, and it was, therefore, inferred that the substance which gave to the blood its antitoxic properties was contained in the blood serum.

Putting aside some incomplete observations, it may justly be said that serum therapeutics began with this discovery of Behring's; at the same time the humoral doctrine of immunity received a new impetus.

It was found that this antitoxic property of the serum of immunized animals was pretty general, as was proved by observations on tetanus, diphtheria, pneumonia, typhoid fever, cholera, etc.; and it was further discovered that poisons manufactured by higher plants and animals, as for instance abrin, ricin, and snake venom, gave rise to the same antitoxic properties as the serum of animals immunized against these poisons. It would be impossible here to allude, even briefly, to all the work of Behring and Kitasato; Brieger, Kitasato, and Wassermann; Behring, Vernicke, Boer, Kossel, and Knorr; Ehrlich, Kossel, and Wassermann; Pfeiffer; Tizzoni; Vaillard; Metchnikoff, Sanarelli, Phisalix, and Bertrand, Roux, L. Martin, Chaillon, Calmette, etc.

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[1] E. Roux, The Croonian Lecture, delivered before the Royal Society, 1889.

[2] E. Roux and A. Yersin, Annales de l'Institut Pasteur, vol. ii. p. 629, December, 1888.

[3] Behring and Kitasato, Deutsche medicinische Wochenschrift, December 4, 1890.

Facts have accumulated, theories have passed, and the exact value of Behring's discovery is beginning to be apprehended. The addresses of Roux, given at the Eighth International Congress of Hygiene and Demography, held in Budapesth at the beginning of this month, on "Antitoxic Serums" and "The Treatment of Diphtheria by Antidiphtheritic Serum,"[1] gave so clear an idea of the subject that, although the methods described by him differ somewhat from those of Behring, Delépine follows him in setting forth the present state of our knowledge of diphtheritic antitoxic serum. It may be added that at the same meeting Behring, through Heubner, expressed views similar to those which had been put forth by Roux, and that Aronson, of Berlin, expressed entire agreement with Roux both with regard to methods and results.[2]

In order to obtain antitoxic serum it is necessary first to immunize the animals which are to provide the serum, and before attempting to immunize animals it is necessary to obtain a good supply of active toxin. The ordinary way to prepare the diphtherotoxin consists in cultivating the Klebs-Löffler bacillus in bouillon for several months. Roux and Yersin's method is more rapid. They cultivate the diphtheria bacillus at 37° C. in alkaline peptone bouillon placed in a wide-bottomed flask with a lateral tubulure, and, when the organism has begun to grow, they direct a current of moist air over the surface of the cultivation medium. In three weeks or one month they find that the bouillon is rich in toxin, which varies in activity according to the source from which the bacillus has been derived and some other circumstances difficult to control. This bouillon culture is then filtered through a Chamberland bougie, and the filtrate, which contains the toxin but no microbe, is kept in the dark in well-closed vessels.

The next step is to immunize the animal which is to provide the antitoxic serum. This can be done with pure diphtheritic toxin, but the process is difficult on account of the very poisonous properties of this toxin, $\frac{1}{10}$ of one cubic centimetre of certain samples killing a guinea-pig weighing five hundred grammes (over one pound) in from forty-eight to sixty hours.

Roux prefers to use iodized toxin for the first injections. With Vaillard, he had found previously that the virulence of tetanotoxin is much diminished by admixture with a solution of iodine; the same is true of diphtherotoxin. The injection is repeated at intervals, the dose of toxin being gradually increased until the animal is able to bear doses of toxin which, under ordinary circumstances, would be surely fatal. Many kinds of animals may be used, such as the rabbit, dog, sheep, goat, cow, horse, etc., but some, such as the sheep and the goat, are so sensitive that their immunization is troublesome to obtain. Roux prefers the horse, the serum of which he has found perfectly innocuous to man, because it is an animal which can bear large doses of pure toxin, can be immunized rapidly, and yields large quantities of very antitoxic serum. He found that in the case of some horses it is possible to inject from the first two to five cubic centimetres of pure toxin with no other effect than a slight fever and local œdema. On the other hand, he has been able, in eighty

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[1] D. Roux, Transactions of Eighth International Congress of Hygiene and Demography, Budapesth, *Semaine Médicale*, September 8, pp. 405, 406; *Lancet*, September 22, 1894, p. 675. Two fuller articles on the same subject are to be found in the *Annales de l'Institut Pasteur*, September 25. E. Roux and L. Martin, Contributions à l'Étude de la Diphthérie; E. Roux, L. Martin, and Chaillon, Trois cents Cas de Diphthérie traités par le Sérum antidiphthéritique.

[2] The results obtained in Berlin appear to have been more favorable than those obtained in Paris; but independently of treatment, diphtheria seems to be a more fatal disease in Paris than in Berlin, if one may venture to draw such a conclusion from the hospital statistics brought forward by Roux and Aronson.

days, to protect horses to such an extent that they could bear the enormous dose of two hundred and fifty cubic centimetres of pure toxin, only slight local reaction and fever following the injection. The blood is obtained from the jugular vein: this vessel can be tapped with a trocar over and over again without losing its elasticity. From the blood thus drawn it is easy to separate a perfectly clear serum. The serum itself is used for conferring immunity upon other animals; for the antitoxin, to which it owes its protective and curative properties, is as little known as the toxin which gives rise to it when injected into the body.

The action of antidiphtheritic serum is well shown by the following experiments: 1. If after injecting antidiphtheritic serum vulvar diphtheria is produced in a guinea-pig, the local lesions soon begin to subside, and the false membranes separate on the second day; in control animals at the same date the local lesions are progressing and intense, and the temperature is high. In such unprotected animals the disease is fatal in from four to six days. 2. If twelve or even twenty-four hours after inoculating a guinea-pig with diphtheria one injects it with a quantity of antitoxic serum equal to from $\frac{1}{1000}$ to $\frac{1}{10000}$ of the weight of the animal, the animal recovers, the membranes beginning to separate already on the second day. 3. The same results are obtained in the case of experimental tracheal diphtheria in the rabbit, provided the interval between the beginning of the disease and the injection be not too great and the quantity of antitoxic serum injected be sufficient. It has been found that twelve hours and even eighteen hours after subcutaneous inoculation of diphtheria bacilli the serum is still curative. The results are not so favorable when, instead of the bacilli, the toxins produced by them are injected; for a dose of antitoxic serum equal in weight to the $\frac{1}{1000}$ of the guinea-pig will not be sufficient to counteract the effects of a fatal dose of toxin injected twelve hours previously. The same dose, however, would be efficacious after six hours.

When the antitoxic serum is injected before the toxin the animals are found to be refractory if the dose of antitoxin is proportional to the dose of toxin injected. Thus, guinea-pigs which have received $\frac{1}{100000}$ of their weight of antitoxic serum twelve hours before the injection of the toxin resist a dose of toxin capable of killing control guinea-pigs in five days. Under the same conditions a dose of serum equal to $\frac{1}{50000}$ of the weight of the animal protects it against a dose of toxin capable of killing in two days ($\frac{1}{10}$ cubic centimetre of the toxin used in these experiments was capable of killing a guinea-pig weighing five hundred grammes).

It is much more difficult to arrest the disease when there is a mixed infection, as, for instance, when the trachea of a rabbit is inoculated with a mixture of streptococci and diphtheria bacilli. Such animals, however, may recover if treated with repeated large doses of serum within the first twelve hours. This is important to remember, for the presence of streptococci in human diphtheria adds considerably to the severity of the cases. Nine-tenths cubic centimetre of the toxic serum mixed outside the body with $\frac{1}{10}$ cubic centimetre of antitoxin produced not even local symptoms; it was only when the dose of antitoxin had been reduced to $\frac{1}{50}$ of that of the toxin that local œdema was produced; but even in such a case recovery followed.

These results obtained in the lower animals have been confirmed by observations on the human being. The number of observations recorded by various observers is now considerable, and it would appear from the statistics published by Behring, Ehrlich, Kossel, Wassermann, Aronson, Roux, etc., that by the new method of treatment the mortality of diphtheria can be diminished by half.[1]

Before going further it is well to state that there is a marked difference between

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[1] This, from a therapeutical point of view, seems insignificant when compared with the results announced by Loeffler at the same congress as a result of local treatment.

the immunity obtained by the injection of a toxin and that obtained by the injection of antitoxic serum. In the first case, immunity is slowly acquired, and that not without risk to the vaccinated animal, but when once acquired it lasts a long time. In the second case, the immunity is obtained rapidly, almost immediately, but it is lost also very quickly; in the case of diphtheria, it is lost in some weeks. During that period, however, the animal inoculated is protected against both the toxin and the living bacteria. The antitoxic serum can be injected in large doses without producing any toxic effect beside the trifling rash sometimes produced by the serum itself (independently of the antitoxin).

The way in which antitoxins are formed is still unknown. It seems, however, that Buchner's idea that they might be derived from the toxins themselves cannot be supported any longer. On the contrary, it seems more and more probable that the antitoxins are products of cellular activity, the toxins when injected into the body in suitable doses stimulating certain cells and causing them to secrete the antitoxins.

The existence of a special cellular action seems to be well proved by the observation of F. Klemperer, who found that in the egg of an immunized hen the yolk was antitoxic, but the white was not. This view is adopted by Metschnikoff and Roux, and Behring has also apparently accepted it.

The mode of action of antitoxins has been found to be not quite so simple as it seemed at first. The antitoxins do not neutralize the toxins by a sort of combination with them. This is proved in various ways. Buchner has found that a mixture of tetanotoxin and antitoxin, which is innocuous to mice, may kill guinea-pigs. Vaillard and Roux have observed that guinea-pigs into which certain bacterial products (of cholera vibrio) had been injected were liable to take tetanus after the injection of mixtures of tetanotoxin and antitoxin, which produced no effect on normal guinea-pigs. The same result was obtained when certain bacterial products (Kiel bacillus, bacillus coli, etc.) were injected after the toxin and antitoxin had been. These observations are explained on the supposition that the toxin and antitoxin do not react directly one upon the other, but do so through the intermediation of the cells of the organism, on which they would both be capable of acting. This supposition is said to receive support, if not complete proof, from the observation of Calmette, Phisalix, and Bertrand. These observers have shown that the serum of animals immunized against snake poison is antitoxic.

The antitoxin is destroyed at a temperature of 70° C.; the toxin itself is destroyed at a much higher temperature. A mixture of poison and antitoxin, which would have no effect if injected without further treatment, can be rendered toxic again by heating up to 70° C. This shows that the toxin was not combined with the antitoxin or destroyed by it in the mixture. When the two are injected into the body of an animal, the poison, being present in lethal dose, must be prevented from producing its effect by the action of the antitoxin on the cells.

The antitoxic property of the serum, so marked in the case of tetanus, diphtheria, snake poison, etc., is absent from the serum of vaccinated animals in the case of cholera, pneumonia, typhoid fever, hog cholera, etc., although in these diseases the serum protects against the microbe, just as in the case of tetanus or diphtheria. Protective serum is not, therefore, always antitoxic. "We can readily understand," says this writer, "how a protective serum can act by stimulating the cells which have to fight against the microbes; and this seems to be the only way in which a serum which is not antitoxic may act. But we have also seen that even antitoxic serum must act on the cells, so that we are driven to the conclusion that serum-therapeutics is based ultimately on a special action of the serum on the cells, a certain stimulation; and the active principles of protective serum might be called, to use Metschnikoff's word, 'stimulins,' instead of 'antitoxins.'"

Such a conception of the action of the so-called antitoxic serums would naturally suggest that their action is not so specific as was supposed at first. The serum of an animal has actually been found in some cases to protect from disease against which this animal was not immune. The specificity of action of the tetanus and diphtheria antitoxins seemed to be established by the fact that antidiphtheritic serum has no action on tetanotoxin and *vice versa*. But Roux and Calmette have found that the serum of a horse immunized against tetanus retards or even prevents the action of cobra poison (the converse is not true).

The serum of rabbits vaccinated against rabies is also antitoxic for snake poison. Antidiphtheritic serum retards very much the action of abrin. It is quite true that such antitoxins act much more powerfully on the corresponding toxins than on any other, but the specificity cannot be said to be absolute. All this tends to add weight to the belief that the preventive and curative serums do not act directly upon the toxins, but on the cells of the organism by increasing their special activities, by which they resist pathogenic microbes and the action of their products.

There remains to explain what is the difference of action on the cells between the immunity produced by vaccination with increasing doses of toxins, and that produced by antitoxins.

A Criticism of the "Germ Theory of Disease," Based on the Baconian Method. (*Provincial Medical Journal*, November 1, 1894.) By Lawson Tait, F.R.C.S., of Birmingham, England.

The author, reasoning by Bacon's inductive method, tries to prove that the "germ theory of disease" is an amusing hypothesis. The rule of reasoning in Bacon's own words is, "The form which is sought can be detected only by a process of exclusion, by which we find a phenomenon constantly present when the effect is present, absent whenever the effect is absent, and varying in degree with the effect. Such a phenomenon would be the form in question, the cause of the effect or attribute." The author assumes that the bodies which we call micro-organisms are the effect of the disease and not the cause. The phenomena of decomposition are not the same as those of disease, not even in the exanthematic fevers, where the affection of the whole body at a blow is due to the circulation of the blood. There is not the humdrum uniformity in these diseases that there is in decomposition. Again, in the class of diseases known as tuberculous peritonitis, operation has cured cases in which the bacillus tuberculosis has been found, while cases in which the bacillus has not been found have proved fatal. There is small value to be attached to the great bulk of original research, owing to the flat contradictions. The germ theory of eczema stands on very slender grounds, since there is so wide a difference of opinion as to the cause, although the phenomena can be thoroughly investigated by harmless experiments and perfect optical appliances. The fact that the fungi affecting the hair-follicles attack only domesticated animals seems to argue against the germ theory. The author believes that the cause of disease is the condition of the tissues or of the soil. The presence of typhus fever in certain thickly populated districts, its absence in sanitary communities; the small mortality—0.02 per cent.—in operations on the perineum where asepsis has been used as contrasted with the larger mortality—5.0 per

cent.—in operations where antisepsis has been employed; and the great reduction in the number of cases of erysipelas after cleanly operations and more air-space, are cited in support of this belief. The organization of a protected blood-clot and of protected dead material when placed in wounds argues against the phagocytic theory, since phagocytes cannot move through a blod-clot. The author believes that the tubercle bacillus is but the sport of an ordinary organism growing on a new soil, which resists the action of the ordinary organisms of decomposition but feebly.

[Why one of Koch's postulates should be picked out for discussion and not the others is not clear.]

The Channels of Infection in Tuberculosis. (*Lancet*, October 27, 1894.) By G. Sims Woodhead, M.D., of London.

In an address delivered at the opening meeting of the North London Medico-Chirurgical Society, Dr. Woodhead called particular attention to the frequency of infection by means of the bacillus tuberculosis being introduced into the body with food. The facility with which not only the intestinal tract but also the lungs may become tuberculous in this manner has been clearly shown by his own observations and that of others, and by numerous feeding experiments on the lower animals. In discussing the subject he speaks of the protection afforded by the rings of adenoid tissue, including the tonsils, which surround in man and other mixed feeders the openings of the larynx and œsophagus, and by the masses of lymphoid tissue in the lower reaches of the alimentary tract. That these are capable when in a condition of health of disposing of a large number of even the most virulent micro-organisms is undoubted; but that these very structures which usually protect may become the open avenues of infection is just as evident. In many cases the process of infection can be traced from the tonsils to the glands of the neck, thence into the thorax through the mediastinal and post-sternal glands, and through the intercostal lymphatics and glands. Infection has also been traced from old calcified mesenteric glands through the retroperitoneal to the posterior mediastinal glands, and thence to the root of the lung. Dr. Woodhead is also convinced of the fact that particles of food may be carried directly to the lung and infection takes place in this manner. In certain cases in which the tonsils are exempt yet the chain of glands connected with them is enlarged, it seems that after injuries of the mucous membrane the *bacillus tuberculosis* has gained entrance; that the phagocytes have been able to take up the micro-organisms but not to destroy them, and that they have thus been carried to neighboring glands where the phagocytes, unable to deal further with them, have succumbed, and their protoplasm has served as a nutritive medium for the further growth and multiplication of the bacilli. It seems therefore probable that these very protective masses of adenoid tissue, under conditions of disease or by reason of injury, materially assist in furthering the process of infection.

The Danish government, in view of these facts, has placed in the hands

of its chief veterinarian, Dr. Bang, the annual sum of £3000 for the systematic inspection and disposal of tuberculous cattle. Tuberculin is to be used as the diagnostic agent. All infected cattle are to be killed. In speaking of tuberculin Dr. Woodhead says, that even if the clinical use of this substance has done more harm than good, the great number of lives it will enable us to save when used as a means of diagnosis makes it of inestimable value.

The lecture was illustrated by numerous lantern slides and photo-micrographs, many of which clearly demonstrated the manner in which infection of the lungs may take place as the author has indicated.

Pigmentation of Uric Acid Crystals. (*Journal of Pathology and Bacteriology*, November, 1894.) By Archibald E. Garrod, M.D.

Uric acid crystals are normally colored by the yellow pigment urochrome, and the reddish coloring-matter uroerythrin, and not by urobilin or hæmatoporphyrin. The shades of color so frequently seen in uric acid crystals represent varying proportions of the above two pigments. The brown appearance of the crystals produced by the action of mineral acids, the oxidation products of phenol derivatives, and the pigments of the bile have a share in the coloration of the crystals in some cases.

FORENSIC MEDICINE.

IN CHARGE OF LORENZO D. BULETTE,
Of the Philadelphia Bar.

THE RIGHT OF AN UNLICENSED, BUT SKILLED, SURGEON TO RECOVER COMPENSATION FOR HIS SERVICES IN A CASE OF EMERGENCY.

The Indiana Revised Statutes, 1894, provide that "any person desiring to practise medicine, surgery, and obstetrics in this State shall procure from the clerk of the Circuit Court wherein he or she resides, or wherein they desire to locate to practise, a license which authorizes him or her to practise anywhere within the State . . ."[1]

Another section[2] of the same act provides that "no cause of action shall lie in favor of any person for services as physician, surgeon, or obstetrican, who had not prior to the rendition of such services procured a license to practise as herein provided for . . ."

The case of Com'rs *vs.* Cole,[3] which arose under these sections, aptly

[1] § 7319. [2] § 7322. [3] 36 N. E. Rep. 912 (1894).

illustrates the spirit that guides the courts in construing the medical acts, and the extent to, and the circumstances under, which the strictness of their provisions will be relaxed where their enforcement according to the letter of the law would lead to harsh consequences.

This was an action to recover compensation for his professional services brought by a surgeon called from an adjoining State, he being the nearest surgeon with the requisite skill to perform an amputation which was immediately necessary to save the patient's life, and he not, therefore, having sufficient time to procure the license required by the statute. It was held that he could recover his fee for the amputation, but not for the subsequent visits, after he had had time to procure a license.

The plaintiff, Doctor C., testified that at the time the services were rendered he resided in A. County, in the State of Ohio; that he was called by the attending physician to the relief of one L., living in M. County, in the State of Indiana; that L. was suffering from a broken leg which it was necessary to amputate as soon as it could be done in order to save his life; that the attending surgeon had caused the plaintiff to be sent for on account of his peculiar skill as a surgeon; and that it was much nearer to the residence of Doctor C. than to that of any other competent surgeon who had the instruments and skill necessary to perform such an amputation, —the next nearest competent surgeon living at the county seat, a distance of sixteen miles.

It also appeared that Doctor C. was not in the habit of practising in M. County, Indiana, and had no license authorizing him to do so, nor did he have time to go to the clerk's office in that county to procure such license without endangering the life of L.; that there was a pressing emergency and an urgent necessity to amputate the said leg in order to save L.'s life; that the necessary amputation was performed and the service was reasonably worth fifty dollars, and that the leg was dressed and cared for by the plaintiff thereafter, he having made five trips for that purpose, each reasonably worth ten dollars.

The defendant resisted payment of the plaintiff's fee on the ground that the latter was not licensed to practise in the State of Indiana.

Counsel for the plaintiff gravely contended that because he was not in the habit of practising his profession in the County of M., therefore the amputation in this case and the visits and the dressings of the wound did not amount to a practising of medicine and surgery in that county, in the sense contemplated by the statute. "If this contention," said the court, "were correct, the statute would be little more than a dead letter. The practice of medicine and surgery consists in the application of science, skill, and experience to the cure or alleviation of the ailments of the human body; and whether a physician exercises his skill upon one patient, or upon a greater number, he is, in each case, engaged in the practice of his profession. This statute requires every physician or surgeon desiring to practise his profession in this State to procure a license therefor.

"This statute," continues the court, "has been upheld in several decisions of the Supreme Court. According to the letter of the law, therefore, strictly and literally interpreted, the plaintiff could recover nothing. Courts are not, however, always required to give full force to the exact letter of the law, but are oftentimes permitted—nay, more, required—to relax somewhat the rigor of an exact compliance. In one case, a recovery was allowed for services rendered without registration where the physician registered as soon as he could. So far as the amputation itself is concerned, it appears that it was sixteen miles to the county seat, and that the plaintiff did not have time to go to the clerk's office to procure a license without endangering the life of the patient; that there was a pressing emergency, and an urgent necessity to amputate the said leg as soon as it could be done, in order to save the life of the said L. This is, we think, one of those exceptions contemplated in that case, where the court said,[1] 'It may be that there are cases where the courts would hold that the statute does not apply in its full vigor, as where there is an emergency demanding prompt action,' etc. To hold that the plaintiff's conduct, thus far, was within the inhibition of the statute would be the extreme of inhumanity. This does not, of course, justify the plaintiff in continuing his attendance upon his patient, day after day, without procuring a license for the practice of his profession in the County of M., but it does show that he was entitled to some relief."

The peculiar skill of the surgeon in this case was urged as a reason for giving a more liberal interpretation to the statute. But the Appellate Court were of the opinion that, inasmuch as the statute is intended to protect the people of the State against quacks and other irresponsible, incompetent physicians, it is better that competent physicians should suffer some inconveniences than that the door should be opened wide for the incompetent. "If a physician," say they, "may safely practise his profession without a license because some one—wise or unwise—judges him to have special qualifications for the treatment of certain ailments, and 'the call is made because of some special skill or ability of the physician in a particular branch of his profession,' then there will remain few practitioners in the land who may not utterly disregard the provisions of the law. All that would be necessary for him to show would be that he was called to visit his patient 'because of some special skill or ability' in the treatment of some given infirmity; and this he could always do, for the very reason for his call was that his patient believed him to be possessed of such special skill and ability. The law does not require what is unreasonable or impossible, and we think that the plaintiff was entitled to compensation for the amputation, even though he did not have a license, if rendered in the emergency alleged; but he was entitled to no compensation for his after services, for which there was ample time to procure a license as required by law. The right to recover is not to be extended beyond the necessity of the actual emergency."

[1] Orr vs. Meek, 111 Ind. 40.

BOOK REVIEWS.

Travaux d'Electrothérapie Gynécologique. Archives semestrielles d'Electrothérapie gynécologique fondées et publiées. Par le Dr. G. Apostoli, Paris, 1894, pp. 717–80.

It must be a great source of satisfaction to Dr. Apostoli to find such a widespread adoption of his methods of electrical treatment as is evident from an inspection of this book. He and his colleagues have brought together in one volume the published experience of gynæcologists from every quarter of Europe and America, translating into French from the English, German, Russian, Polish, Italian, and Hungarian sources an immense mass of clinical evidence as to the value of electricity in gynæcology. The volume opens with a prefatory letter by Dr. Thomas Keith in which he acknowledges his indebtedness to Dr. Apostoli. Dr. Keith states that he has abandoned for over two years operating for fibroma by laparotomy, although, of course, he continues to operate in this method for sarcomata and ovarian cysts. He acknowledges that he has not obtained total retrogression of very large tumors, but he does claim in other instances that they have disappeared without leaving any traces. Dr. Keith and his son Skene Keith append the history of one hundred and six cases treated by electricity. Then follow favorable reports from Spencer Wells, Playfair, Lawson Tait, Graily Hewitt, and a score of others. The Russian data, comprising one hundred and fifty pages, are from the clinic of Professor K. F. Slaviansky, and alone constitutes an excellent treatise on the subject. The histories of fifty-seven cases are appended.

While Dr. Apostoli adds nothing himself to the volume, we notice in the bibliography a list of forty-three contributions to medical literature by this author. It will be noticed that Saulmann, of Brussels, attributes to Apostoli the use of currents frequently reaching two hundred and two hundred and fifty MA. A foot-note by the editor disclaimed the use of such currents as an error, and acknowledges only one hundred to one hundred and fifty MA. Apostoli also does not endorse Saulmann's statements as to the manner in which the current acts, denying that eschars form only at the area of contact of the positive pole and that electrolysis occurs only at the negative pole. As to the effect on fibromata Dr. W. Fraser Wright, of Professor Simpson's clinic, in Edinburgh, sums up his results in sixteen cases. In none of these did the tumor entirely disappear, but in eleven there was a diminution of volume, and in one case only was there a considerable decrease in size; in the others the diminution was insignificant although appreciable to the touch. Five fibromas were uninfluenced. As to the symptoms: in two cases out of every five it is stated that the symptoms were permanently relieved; in the other three cases there was no abatement. In hemorrhagic cases, however, nearly all were greatly relieved. Dr. Wright lays great stress on the value of electricity in treating cellular exudates.

The collected experience of so many workers is extremely valuable in fixing the worth of the methods under discussion.

The work ought to have been indexed for reference. This is, however, a very constant source of complaint against French works upon medicine. G. H.

THE PRINCIPLES OF BACTERIOLOGY: A PRACTICAL MANUAL FOR STUDENTS AND PHYSICIANS. By A. C. Abbott, M.D., First Assistant, Laboratory of Hygiene, University of Pennsylvania, Philadelphia. Second edition, enlarged and thoroughly revised, with 94 illustrations, of which 17 are colored. Philadelphia: Lea Brothers & Co., 1894.

The first edition of Abbott's "Bacteriology" appeared in 1892, and was welcomed by workers as the ripe experience of an expert; on closer study, however, it was found sadly deficient in many respects, though never in clearness, and could be used only in conjunction with more extensive works. In the second edition the author has practically reconstructed the book; every chapter shows important and valuable additions, many of them more important than the entire chapter of the first edition; as in the chapter on diphtheria, which has been lengthened from ten to sixteen pages, and vastly improved by extremely satisfactory illustrations. A chapter on immunity, embracing a critical and historical review of much of the available literature on the subject, has been added. Important additions have been made to the chapters on typhoid and cholera, and the text elucidated by splendidly executed illustrations.

It is probably criticising to the extreme, but one cannot refrain from observing a certain laxness in Dr. Abbott's chemical nomenclature,—*e.g.*, pp. 65 and 66, "two per cent. soda solution." One accustomed to laboratory work infers that the carbonate of sodium is meant; but the novice might try caustic soda (sodium hydroxide) or bicarbonate of sodium; again, reference is made, p. 66, to "chlorinated lime in which the percentage of chlorine is high": it seems to us it would have been more accurate to have said, "chlorinated lime containing not less than — per cent. of available chlorine." Where the formulæ and directions apply to laboratory technique, the detail is clear; but the disposition to handle chemical terms in the above manner appears at several points throughout the book.

The proof-reading has been most carefully done, and freedom from typographic errors is to be admired. Page 308, second line, letter transposition in the first word, fæcal, has made it almost unrecognizable; this accident is prominent because it is alone. The paper is perfect, the binding all that could be desired, and we predict that the present edition will have a more extended and rapid sale than its predecessor. No matter how elaborate the laboratory library may be, it will not be complete without a copy. W. M. L. C.

THE CARE AND FEEDING OF CHILDREN. By L. Emmett Holt, M.D., Professor of Diseases of Children in the New York Polyclinic, etc. New York: D. Appleton & Company, 1894.

Intended primarily as a catechism for the use of mothers and domestics having the care of children, this little book admirably accomplishes its purpose. Its simplicity, brevity, and accuracy especially commend it. The method of question and answer has been adopted in order to impress the essential facts more forcibly upon the memory.

The part treating of "infant feeding" occupies a considerable portion of the book, and is full of interesting facts particularly valuable to those primiparæ, or multiparæ even, who find themselves at a loss to provide proper nourishment for their offspring. Bathing, the proper care of the eyes, mouth, skin, etc., the temperature of the nursery, weaning, the normal action of the bowels, teething, worms, convulsions, contagious diseases, and bad habits, all receive due attention. The advice given is sound and practical. By reason of its brevity the valuable information is more readily obtainable from this little volume than from larger works on the same subject. J. P. T.

DISEASES OF THE SKIN: AN OUTLINE OF THE PRINCIPLES AND PRACTICE OF DERMATOLOGY. By Malcolm Morris, F.R.C.S., Surgeon to the Skin Department, St. Mary's Hospital, London, etc. In one 12mo volume of 572 pages, with 19 chromo-lithographic figures and 17 engravings. Cloth, $3.50. Philadelphia: Lea Brothers & Co., 1894.

The first three chapters of this work consider the pathology, classification, and principles of diagnosis. The five chapters following are devoted to a consideration of the diseases of the skin dependent upon nerve disorder. The all-important subject eczema takes up two chapters. After treating of artificial eruptions, psoriasis, and pityriasis, the remainder of the book is divided into the consideration of local and general inoculable diseases, diseases of the skin, glands, and epidermic appendages, new growths, and malformations.

The book is well and carefully written. Especial attention is paid to bacteriology in connection with the pathological considerations. The therapeutical portion of the work is modern, many of the newer drugs receiving much attention. The chromo-lithographs are exceedingly well executed, though the coloring is somewhat exaggerated. The work is concise, but not too brief to detract from its value. It should prove a valuable addition to the library of the busy general practitioner.

J. P. A.

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A MONOGRAPH ON DISEASES OF THE BREAST. THEIR PATHOLOGY AND TREATMENT, WITH SPECIAL REFERENCE TO CANCER. By W. Roger Williams, F.R.C.S., late Surgeon Western General Dispensary, and Surgical Registrar Middlesex Hospital. With seventy-six figures. Pp. 572. 1894.

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